

With the Author's Compliments.

ESSAY

UPON

CRETINISM AND GOITRE.

BY

EDWARD WELLS, M.D.,

LATE FELLOW OF NEW COLLEGE, OXFORD; AND RADCLIFFE'S
TRAVELLING FELLOW.

"Homo sum, humani nihil a me alienum puto."

LONDON:

JOHN CHURCHILL, PRINCES STREET, SOHO.

MDCCCXLV.





Louis Roth.

33 Years Old.

"Taken from Dr. Otto Thieme's Monograph upon Cretinism."

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LONDON:

PRINTED BY G. J. PALMER, SAVOY STREET, STRAND.

R35991

TO

EDWARD J. SEYMOUR, M.D.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS,

AND

SENIOR PHYSICIAN OF ST. GEORGE'S HOSPITAL,

IN TOKEN OF HIGH ESTEEM,

AND IN GRATITUDE FOR MANY PERSONAL FAVOURS,

THE FOLLOWING PAGES

ARE INSCRIBED,

BY HIS MUCH OBLIGED AND SINCERE FRIEND,

THE AUTHOR.

P R E F A C E.

THE following Essay, which is addressed as much to the general reader as to my medical brethren, was written under the following circumstances.

During a professional residence at Interlachen, last summer, I had frequent opportunities of visiting the institution for the education of infant cretins, which was established upon the Abendberg, in the Canton Berne, in 1840. My visits to this establishment, and the repeated conversations which I had with its benevolent founder, Dr. Guggenbuhl, naturally interested me in the history of a disorder whose calamitous effects I was so constantly witnessing. When by successive observations I was enabled to verify the reality of the benefit conferred upon the little patients under his care, by the hygienic conditions in which they were placed, my interest became still further increased, by the hope of making more generally known the utility of this noble undertaking.

The question of cretinism has already excited a considerable interest in the different countries of continental Europe; while in England, from having been considered a subject of no practical importance, it has engaged but little attention. During the last two years, however, a society

has been formed in London for promoting the success of the institution on the Abendberg, owing to the laudable exertions of Dr. W. Twining.

My situation of Radcliffe Travelling Fellow having necessarily afforded me many opportunities of travelling, I have at different periods visited all those spots where this scourge of the Alpine vallies exists in its severest forms. Although it was not until the past year that I investigated to any extent the causes to which cretinism is due, yet I had frequently made observations upon its effects, which have been introduced into the following pages. I have endeavoured to present the reader with a fair view of the different opinions which have been maintained upon the nature of the affection. If I have erred in the conclusions to which I have arrived with respect to its predisposing and proximate causes, I trust that my errors may find an apology in the acknowledged difficulty of the question.

In the quotations which I have made from French writers, I have almost always preferred giving their original words, from a feeling that it was unfair to quote an author without using his actual expressions. The additional notes, which a translation of such passages would have required, in order to do justice to their authors by adding the original French at the foot of each page, would have increased unnecessarily the length of this Essay, and the French language is so generally understood, and is so much better suited to French ideas, that there appears no reason to clothe the latter in English phraseology.

CONTENTS.

	PAGE
CHAP. I. ORIGIN OF THE TERM CRETINISM . . .	1
II. A BRIEF ACCOUNT OF THE AUTHORS WHO HAVE WRITTEN UPON CRETINISM . . .	4
III. DESCRIPTION OF A CRETIN . . .	14
IV. PROXIMATE CAUSE OF CRETINISM . . .	19
V. PREDISPOSING CAUSE OF CRETINISM . . .	26
VI. DIFFERENT FORMS UNDER WHICH CRETINISM SHOWS ITSELF . . .	43
VII. DISEASES TO WHICH CRETINS ARE PECULIARLY LIABLE, THE ORDINARY DURATION OF THEIR LIFE, AND THE MANNER OF THEIR DEATH	57
VIII. THE PHYSICAL AND MORAL EDUCATION OF THE INFANT CRETIN . . .	61

A N E S S A Y,

&c.

CHAPTER I.

ORIGIN OF THE TERM CRETINISM.

ALTHOUGH the meaning of a name is of little importance, when compared with a due conception of the matter of which it is the sign, yet it often happens that a title has originated in some attribute or quality, which it is important to remember. Before entering therefore upon the subject of the following pages, I shall say a few words upon the origin of the word "*Cretinism*."

In that part of Switzerland where French is spoken, the term "*Cretin*" has been long in use to designate the whole class of goitrous, dwarfish, deaf and dumb, and otherwise deficient beings, who are so common in the Alpine vallies, and particularly in the canton Valais. In Piedmont, viz. in the valley of Aosta, where perhaps the traveller is more struck by the frequent exhibition of cretinish deformities, than in any part of Switzerland, no distinguishing appellation is used to separate Cretins from the insane. In this district both have the common denomination of *Pazzi*. In the Pyrenees, Cretins are called *Cagots* or *Capots*—and in Navarre, *Caffos*. In the country around Salzburg the vulgar

name for them is *Fexe*, in Styria and Carinthia it is *Dosten*, *Trotteln*, *Gacken*, and in Suabia *Simpel*.

Cretin, however, is the denomination by which they are generally spoken of at present, in whatever countries they may exist; and as it is the one which will be solely used in the following pages, it is the only one of which I shall endeavour to ascertain the origin.

The derivation of the term which was formerly most adopted, was from the French word *Chretien*, (a Christian.) This by an easy alteration of patois might be pronounced *Cretin*. In fact, such persons were honoured by their families as holy beings, and were regarded as enjoying the peculiar favour of Heaven. Foderé, in a note to his work upon *Goitre and Cretinism*,¹ says, “the word *Cretin* comes from *Chretien*, (*bon Chretien*, *Chretien par excellence*,) a title which is given to such idiots, because they are said to be incapable of committing any sin. In some vallies, where this disease is endemic, those affected by it are also called *Blessed*, and after their death, their crutches and garments are preserved and venerated.”²

¹ “*Traité du Goitre et du Cretinisme.*” Paris, Germinal An. viii.

² In his “*Travels in Switzerland*,” Mr. Coxe has the following remarks upon this subject:—“It has been asserted also that the people very much respect these idiots, and even consider them as *blessings from heaven*, which is strongly contradicted by others. Upon my questioning some gentlemen at the baths of Leuk, they treated the notion as absurd and false, but whether they delivered their real sentiments, or were unwilling to confirm what might lower their countrymen in the opinion of a stranger, will admit perhaps of some doubt. For having since that time repeatedly inquired among the lower ranks, I am convinced that the common people esteem them as blessings. They call them *souls of God without sin*, and many parents prefer these idiot children to those whose understandings are perfect; because, as they are incapable of intentional criminality, they consider them as certain of happiness in a future state. Nor is this opinion entirely without its good effect, as it disposes the parents to pay greater attention to such helpless beings.” Vid. *Travels in Switzerland*, by William Coxe, M.A., F.R.S., F.A.S. Basil, 1802. Vol. ii. p. 82.

It has been supposed by some, that *Cretin* is derived from the romansch word *Cretira*, by which is meant *a poor creature*. But when it is considered that the lingua romanescha is spoken in but a very small part of Switzerland, and that the term *Cretin* was not originally employed there, but was first used in those cantons, of which *French* is the mother tongue, it must, I think, be allowed that this derivation is far fetched.

Mozin derives the term from the Latin word *Creta*, *chalk*. This derivation is considered by Dr. Rösch, in his recent work upon *Cretinism*,³ to be the most natural. It is founded upon the pale whitish complexion, which is peculiar to young *Cretins*, and may, according to Dr. Rösch, be most aptly compared to chalk.

M. Esquirol, in his work upon mental diseases, has suggested yet another derivation of the word *Cretinism*. "May I be permitted," he says, "to venture an hypothesis as to the origin of this expression. Might not the denomination *Crétin* come from the obsolete word *Crétine*, which has the same meaning as alluvium? Has not this name been transferred to such individuals, as have become infirm in consequence of having dwelt upon an alluvial soil? In fact, is not *Cretinism* endemic in such mountain gorges as are very swampy and exposed to a damp air?"⁴

Of these different etymologies, the one which attributes the origin of the term under discussion to the French word *Chretien*, appears to me most reasonable. It is quite in unison with the religious feeling which these unhappy beings without doubt formerly inspired, although no longer shrouded by the same mysterious awe. *Chretien* is also much more easily converted into *Cretin*, than either of the other words which have been proposed.

³ "Untersuchungen über den Kretinismus in Württemberg." Von Dr. Rösch—bei Ferdinand Enke. 1844.

⁴ "Des maladies mentales considérées sous les rapports medical, hygiénique, statistique, et médico-legal." Paris, 1838.

CHAPTER II.

A BRIEF ACCOUNT OF THE AUTHORS WHO HAVE WRITTEN
UPON CRETINISM.¹

It does not appear that cretinism, as a distinct endemic disease, attracted the notice of physicians or philosophers until a comparatively recent period. From the often-quoted line of Juvenal,² we learn that in his time, the frequency of its mildest form (goitre) had become proverbial, and no longer excited surprise. But it does not seem that at this time, the severer forms of cretinism were at all known beyond the limits of the narrow vallies to which they were confined. It is easy to understand how such as were merely goitrous, and were not consequently debarred from general intercourse with the world, would excite more notice than their more unfortunate brethren, who were chained to some unexplored alpine recess by their bodily infirmities.

The first author who wrote upon endemic cretinism was Felix Platu,³ professor of medicine in the high school of Basle, during the latter half of the sixteenth century. He gave a short but striking description of the deaf-and-dumb, dwarfish, and imbecile beings, so common in the canton Valais, of which he was a native. During the same century,

¹ For the notices of those authors, whose works I have been unable to obtain, I am in a great measure indebted to Dr. Rösch's work on Cretinism, which has been referred to in the last chapter.

² "Quis tumidum guttur miratur in Alpibus."

³ F. Plateri observationes in hominis affectibus plerisque. Basil, 1714.

P. Forest⁴, a Dutch physician, described several unfortunate beings, the subjects of cretinism, whom he had seen on his return from a tour into Italy.

Shortly afterwards, the historian Josias Simpler of Zurich gave an account of the cretins of the Valais.⁵

From this period little notice appears to have been taken of cretinism, until the latter half of the last century. At that time the attention of the famous naturalist Horace de Saussure was called to the subject during his travels among the Alps.⁶ He was the first to remark that this imperfect development of the human race only occurs in vallies which are below an elevation of 3000 feet above the level of the Mediterranean. The cause of it he supposes to be attributable to the heat and stagnation of the air, which is shut in by the lofty mountains that inclose these vallies. Under such circumstances he imagines the air to undergo a kind of corruption, the nature of which is unknown. He remarks further, that the atmosphere thus heated and infected, acts principally upon the tender fibres of the infant, thereby producing considerable relaxation, from which results that general atony, which is the specific character of the complaint.

About the same time that Saussure's remarks were published, Zimmerman and Haller gave a short account of the disease, in which they supposed its source to exist in the low and confined situation of those villages which it usually infests. The latter considers the influence of water in the production of the disorder as most improbable.

Shortly afterwards, Ramond de Carbonnieres published his observations upon the appearance of endemic cretinism in the vallies of the Pyrenees.⁷ He supposes the people

⁴ P. Foresti Observat. et Curat. Opera omnia Francf. 1660.

⁵ Descriptio Valesiæ. Tiguri, 1574.

⁶ Voyage dans les Alpes. Vol. ii. p. 480.

⁷ Observations faites dans les Pyrenees, &c. Par Ramond. Chap. xi. p. 204.

among whom he found it to exist, to be the descendants of the Goths and other Barbarians, who had been driven by conquering armies into some retired vallies. He imagines that by successive intermarriages they became leprous; that leprosy produced a degeneration of the blood; and finally, that cretinism is the product of that degeneration. Fodéré, whose treatise upon Goitre and Cretinism I shall presently mention, combats this singular account of the origin of the disease, by observing that among all the people of antiquity, with whom lepra and elephantiasis were endemic, we have no account that any one of them ever lapsed into cretinism.

In the year 1780, the anatomist Malacarne undertook the examination of the bodies of three cretins, and imparted the results in his letters to P. Frank.⁸ He found their crania flatter at the apex, and less flattened at the sides than natural; the mastoid foramina much larger than usual; the posterior foramina lacera almost closed up, so as hardly to give passage to the eighth pair of nerves, the glosso-pharyngeal, and the accessory of Willis; the lateral sinus of the dura mater much larger than is usual throughout their whole extent; the tentorium cerebelli thickened; the axis of the foramen magnum so far perpendicular instead of being horizontal, that the medulla oblongata was forced to form an arc in order to enter the vertebral canal.

Ackermann, who wrote in 1790, supposes the imbecility and other distinguishing features of cretinism to be due to this abnormal construction of the skull, particularly of its base, on account of the pressure, which would thus take place upon the inferior portions of the brain and upper part of the spinal cord. He states cretinism to be a high degree of rachitis, and regards the great dampness of the air in narrow, deep, and inclosed vallies, as its principal cause.⁹

⁸ Lettres de Vincent Malacarne au Professeur P. Frank à Pavie, sur l'état des Cretins. Frank's *delectus opusculorum*, tom. vi.

⁹ Ackermann, über die Kretinen, eine besondere Menschen-Abart in den Alpen. Gotha, 1790.

In 1792, appeared Foderé's excellent work upon goitre and cretinism :¹ he had abundant opportunities of studying the disease in his native place, the valley of La Maurienne ; and he compared his observations in that district, with others which he made subsequently in the valley of Aosta. Foderé considers cretinism to be invariably inherited from the father or mother, most commonly from the former. He not only asserts the connexion of goitre and cretinism, but even supposes that the latter had its origin in the existence of the former. " We find," he says, " that parents who have a goitre of any considerable size, have always the misfortune to beget children labouring under some degree of cretinism. We infer from this fact, that most probably goitre preceded cretinism, and that there were goitrous persons before there were cretins. That it is also probable that a very large goitre occasioned for the first time that defect of organization, which is the source of cretinism. That this latter constantly becoming more inveterate, produced in the course of ages the first perfect cretin, and that the race of such beings has come down to our days by hereditary transmission, no check having been placed by the civil authorities upon the union of the two sexes in persons so circumstanced."² It will be the object of the following pages to show, that instead of cretinism having owed its origin to goitre, the latter is merely a modified degree of the former, which is itself the fons et origo mali.

Foderé's observations excited a general interest upon the subject of cretinism, which has existed ever since. It was then found that the disease prevailed in several other countries, besides Switzerland. Michaelis found it in the Harz, in a village called Lehrbach, situated in a narrow and deep valley.³ Goitre and mental imbecility were also ascer-

¹ *Traité du Goitre et du Cretinisme.* Par F. E. Foderé.

² *Vid. opus citatum.* Sect. 74.

³ *Blumenbach's Medicinisché Bibliothek.* iii. Bd. iv. Stück.

tained to exist together in the Carinthian and Styrian Alps.

About the same time Dr. Autenreith gave an account of the Cretins, whom he met with in and about Tübingen. Having carefully examined the skulls of several of these unfortunate beings, he found their bases to deviate from the normal construction. From these examinations he was led to infer, that the partial malformations of the base of the cranium constituted the essential character of cretinism, by hindering in a partial degree the normal development of the brain itself. He further suggests, that the exciting cause of the affection may be found in the alternations of damp air and excessive heat, occurring in deep vallies, which have but a moderate elevation above the sea-level. At the same time, certain qualities in the water and a deficiency of wholesome food are regarded by him as capable of giving a predisposition to the reception of the disease.

These remarks appeared in a treatise upon cretinism, which was published by the brothers Joseph and Carl Wenzel, at Vienna, in 1802.⁴ These authors describe cretinism as they found it to occur in the mountainous parts of Salzburg. They consider it to be a disease peculiar to the deep vallies of similar districts, and that its cause is to be sought for in a particular condition of the atmosphere.⁵

In 1808, Dr. Iphofen was commissioned by the Saxon government to investigate the question of cretinism. With this view he travelled through Switzerland, Piedmont, the Tyrol, Styria, Carinthia, the Erzgebirge and Harz Mountains, and personally studied cretinism in all these various countries. Iphofen was not aware of the close connexion of

⁴ *Über den Kretinismus*, von Joseph und Karl Wenzel. Wien, 1802, in 8vo.

⁵ I should here mention the work of Dr. Wunderlich, of Ludwigsburg—*“Versuch einer Medicinischen Topographie der Stadt Salz an N. in Köngir Wurtemberg.”* Tübingen, 1809.

goitre and cretinism, and therefore treats of these two affections separately. Cretinism he states to be an imperfect development of the human body. Its proximate cause he places in a deficiency of the vital power, and its predisposing cause in the electrical state of the atmosphere. Goitre he supposes to arise from the use of a water deficient in carbonic acid gas.⁶

In 1813, when the canton Valais formed part of the French dominions, a commission was appointed by Comte Rambuteau, the prefect of the department, to investigate the causes of the prevalence of cretinism in the valley of the Rhone.⁷ In the report which was the result of this investigation, the development of cretinism is attributed chiefly to the heat produced by the rays of a burning sun, concentrated and reflected by the rocks which enclose the narrow alpine vallies. The pernicious influence of a south and south-west wind, the use of water charged with lime, the indolence of the inhabitants, the want of education, the unhealthiness of the dwellings, bad food, drunkenness and debauchery, are all mentioned as favouring the appearance of the disorder. The reporters affirm, that it is very rarely possible, at the moment of birth, to ascertain whether the new-born infant will be a cretin or not, which is in direct opposition to a statement made by Josias Simler upon the same subject.

It would carry me beyond my limits to go through all the treatises which have been subsequently written upon cretinism. I shall therefore content myself with noticing merely the principal authors, noting down such of their opinions upon the nature of the disease, as will be discussed in the following pages.

⁶ Der Kretinismus, medicinisch-philosophisch untersucht von Dr. E. Iphofen. Dresden. 1817. 8vo.

⁷ This report has not, I believe, been published, but is largely quoted by the writer of the article "*Cretinisme*," in the *Dictionnaire de Medecine*." Paris, 1835.

In his dissertation upon cretinism, Maffei⁸ makes a distinction between that form of it which is congenital, and that which is acquired subsequently to birth.

Sensburg⁹ attributes the proximate cause of cretinism to "an excess of organic material in the development of the bones of the head, producing immediately a palsied condition of the brain, and mediately of the whole body. Goitre, which he found everywhere accompanying cretinism, he regards as holding a peculiar relation to the latter, and as depending upon an arrest of dissolved bony matter in the thyroid gland.

Professor Knolz¹ states, that having examined the crania and brains of several cretins, he found both mis-shapen and imperfectly developed. He also mentions that Schiffner, on dissecting the bodies of two cretin-brothers, had found numerous large ganglionic swellings upon the third division of the fifth pair of nerves, and others smaller and less frequent, upon almost all the nerves that are given off by the brain and spinal cord. From these phenomena he supposes, that cretinism consists of a deficient development of the cerebral system; accompanied by an excessive predominance of the ganglionic system of nerves.

Dr. Von Gugger,² from observations which he made upon cretinism at Enns-on-the-Danube, asserts that the degeneration does not take place immediately after birth, but almost always after the lapse of six months, and sometimes later. The proximate cause he seeks in a morbid condition of the

⁸ Maffei. *Diss. de Fexismo, specie Cretinismi.* Landshut. In 8vo.

⁹ Sensburg. *Der Kretinismus, mit besonderer Rücksicht auf dessen Erscheinung im Unter-main und Rezatkreise des Königreichs Bayern.* Wurzburg, 1825.

¹ Knolz. *Beitrag zur Kenntniss des Kretinismus im Salzburgischen—in den medicinischen Jahrbüchern des k k österreichischen Staates.* Neueste Folge. 1 Bd. 1 a 2 Stück. 1829.

² Von Gugger. *S. Oesterr. Jahrb. 19 Bd. 4 St.* "Versuch über die Ursachen und die Verhütung des Kretinismus."

blood, particularly the arterial, which being deficient both in quantity and quality, acts injuriously upon the brain. This bad quality of the blood he attributes to the excess of the ganglionic development, and to the predominance of the vegetative system, which is its consequence. In respect to the causes which generate it, he lays particular stress upon the dwellings, which he always found damp, low, and dark.

In 1842, Dr. Otto Thieme⁴ published an essay, in which he states, "that the distinguishing character of cretinism rests upon an universal weakness of development; that this weakness of the sensible and irritable systems, and general affection of the intellectual powers, and of the animal and vegetative life, have their proximate cause in some deformity of the brain, and their predisposing cause in the telluric and atmospheric influences.

In the same year, M. Gerard Marchant⁵ presented a Thesis to the Faculty of Medicine at Paris, upon cretinism as it occurs in the Pyrenees. He remarks, that moisture of the soil, and dampness of the atmosphere, have a great influence in the production of cretinism and goitre, and he considers these causes quite sufficient to account for the prevalence of the disease in low and deep vallies. From observations made in the Pyrenees, he affirms that the use of calcareous waters cannot be regarded as an indispensable cause of goitre and cretinism. Among the accessory causes he places the absence of cleanliness, the want of wholesome and sufficient food, and intermarriages among the inhabitants of the same villages.

In 1843, Dr. Berchtold Beaupré, of Fribourg,⁶ in a dis-

⁴ Otto Thieme. *Der Kretinismus, eine Monographie.* Weimar, 1842.

⁵ Gerard Marchant. *Observations faites dans les Pyrenees, pour servir à l'étude des causes du Cretinism.* Paris, 1842.

⁶ Berchtold Beaupré. "Dissertation sur le Cretinisme." Fribourg, 1842.

sertation upon cretinism, gave more particularly an account of the disease as it occurs in the lower parts of that town, where it is endemic. He regards the peculiar condition of the atmosphere, as it prevails in that spot owing to local circumstances, as the predisposing cause of the affection, which is most easily developed under the depressing influences of poverty.

Dr. Schausberger⁷ has lately published some observations upon cretinism in the Austrian Medical Wockenschrift. He found the disease endemic upon the course of the Danube, both in Upper and Lower Austria, where it prevails in low situations, while the higher grounds are entirely free from it. He states, that strangers who settle in the infected districts, although themselves of a healthy frame of body, frequently beget cretinish children. When the disease is inherited from the parents, he declares it to be oftener propagated through the mother than the father, which is in opposition to an observation made by Foderé. Dr. Schausberger also remarked, that the disease does not generally make its appearance until half a year after the child's birth, or even later.

The last work which I shall mention is by Dr. Rösch,⁸ of Urach. As it is the most recent, and at the same time the most complete which has yet appeared, I shall quote his account of the nature of cretinism.

“ The phenomena of the highest degree of cretinism prove an excessively deficient development of physical energy, of sensation, and emotion, as well as an equally deficient organization and nutrition ; a very imperfect formation of the nerves and circulating fluids, and consequently of the animal and vegetative functions.

⁷ Schausberger. “ Beobachtungen und Bemerkungen über den an beiden Ufern der Donau in Ober-und-Unterösterreich häufig vorkommenden Kretinismus.”

⁸ Rösch. Untersuchungen über den Kretinismus. Erlangen. Bei Ferdinand Enke, 1834.

“ In the second degree of cretinism, physical life, sensation, and emotion, are not so deeply attacked, and occasionally the deficient development is limited to some single department of the nervous system, as for instance to the defect of some sense, such as hearing, while organization and nutrition are not influenced in the same excessive degree, although they are still in a deficient state.

“ In the more moderate degrees and forms of cretinism, there is a deficiency in the province of the higher nervous system merely with respect to the *acuteness* of physical energy and of the senses, to the *force and clearness* of the sensations, and to *the activity and liveliness* of the emotions; at the same time there is a want of harmony in the employment of those energies, which depend upon the due development of the nervous system and its various dependencies.

“ In the mildest grade of this degeneration, we observe scarcely any deficiency of energy in the province of the higher nervous system, or of the mind; there is, however, a deficient growth, a deformed frame of body, corpulency, a lymphatic habit, a cachectic pale countenance, swelling of the glands, and other phenomena, which indicate an impoverished state of the blood, and an anormal quality of the lymph.”

Dr. Rösch considers that scrofula has a remarkably direct connexion with cretinism, which might well be termed a most complete or universal scrofula. This inference he founds upon his observation, that many cretinish individuals spring from scrofulous families, and labour under indispositions which are set up by a scrofulous process; and further, that the mildest degrees of cretinish degeneration pass into forms of scrofula, and are so lost in them, that to draw a line between the two becomes impossible.

CHAPTER III.

DESCRIPTION OF A CRETIN.

THOSE whom the love of beautiful scenery has attracted within the recesses of the Swiss vallies, cannot fail to have been struck with the miserable beings who loiter in the vicinity of the wonders of nature, with which that country abounds. Even those travellers, who hold it to be a point of philosophy to banish whatever is disagreeable from their thoughts and sight, and for whom the charms of scenery have much more interest than the sufferings of humanity, are compelled by their importunities to bestow at least a passing glance upon these wretched mendicants. Even such a small share of notice will suffice to show, that they possess in common certain characteristics both of form and feature, which unite them into one large class.

In these misshapen beings it is difficult any longer to distinguish the characteristic features of the Caucasian race. For if the facial angle be taken as the criterion of their place in the scale of the human family, they will be found to approach much nearer to the Ethiopian. Were, however, the development of their intellectual faculties to be regarded as fixing their position among created beings, they would sink to the level of the brute creation. In fact, with regard to mental energy, a cretin may be aptly termed idiotic, although it would not be right in other respects to confound the two affections of idiocy and cretinism. Nor is the development of his body superior to that of his mind ;

his frame is small and unsymmetrical, his gait tottering, and his head hangs heavily on his chest. In such a being we try in vain to recognise the image of God, in which man was originally created,—he is no longer the master of the world, but the most feeble of all living beings.

I shall endeavour in this place to give a general description of the appearance which cretins present, reserving for a future page the more minute investigation into the nature of those alterations to which that appearance is due.

Cretins are always of a small stature, the greatest height they attain ranging from four to five feet. With this diminutive stature, some few individuals display a tolerable symmetry in the form of the whole body. By far the greatest number, however, have a most ungainly figure: they are unproportionably broad and square, and from the want of due proportion between the different parts of the body, their gait is difficult, tottering, and uncertain. On examining successively the different divisions of the body, we shall generally find the following characters to be strongly marked.

The head is ordinarily too big in proportion to the trunk, seldom normal, and very rarely too small. The forehead is low and retiring: over each orbit there is almost invariably a shallow depression; the crown of the head is flattened, and the posterior, or occipital portion, broad and large.

The face of a cretin is broad and short. Its expression is in the highest degree brutish and stupid, sometimes morose and sulky, at other times wearing a foolish grin. His complexion when young is of a pale-dirty-white colour; as he grows older, however, it acquires a browner hue, though it still retains its earthy appearance. It is from this dusky tinge of the skin that cretins have been sometimes called marons. The forehead is frequently covered with hair, and wrinkled. At the point where it is united to the nose there is a deep notch. The nose itself is short, broad, compressed

at its origin, and generally turned upwards at the point, while at the same time the *alæ nasi* are broad, flattened, and spreading. The eyes are small and weak; the pupils dilated, and generally affected with strabismus; the eyelids protuberant, œdematous, half-closed, converging inwards and downwards towards the nose, and frequently bleary-eyed. If we examine the bones of the face, we find them large, and very prominent, giving it that peculiar physiognomy, so characteristic of a cretin. The muscles of mastication are voluminous, and at the same time flabby. The mouth is large, generally remaining open, from a want of tonicity to support the under jaw, and constantly drivelling with saliva, while it discloses teeth, carious, covered with tartar, unequal and irregular. The lips are thick, protuberant, and blueish; the under jaw broad and prominent. The tongue is thick, and usually too large for the mouth. It is stated by Otto Thieme, that the *fræna linguæ* are frequently wanting, to which circumstance the difficulty of utterance has been attributed. The ears are large, and stand off from the head. The skin of the whole body is flaccid, and has a dead appearance, sometimes swelled as it were with emphysema, at other times shrivelled, but always feeling dry and cold.

The colour of the hair as well as of the iris varies. The latter is commonly gray, sometimes bright blue, or brown. The hair is for the most part dark, short, and bristly, the eyebrows thin, and the beard generally wanting.

The cretin's neck is ordinarily short and thick, frequently disfigured with a large goitre. His thorax is small, narrow, and crooked, his spine curved, and his abdomen developed beyond all proportion with the rest of the body. The arms hang listlessly by the sides, and the knees totter, being bent forwards and inwards. The fingers are very short, and the nails thick and knobby.

If we now turn our attention to the habits of cretins, we shall find them in this respect as inferior to their fellow-

creatures, as in their physical development. The *complete*¹ cretin sleeps, breathes, eats and drinks—in some instances doing the two last only when fed,—and in these simple processes of vegetative life consist in a few cases all the signs of his existence. It is seldom, however, that the degeneration proceeds thus far. They have generally in some degree at least the power of locomotion, but even then their frailty and weakness is most conspicuous. When they walk, their gait is irregular and slow, oftentimes not under the control of the will. They drag along their legs, which are bent forwards, with an uncertain step, and swagger from side to side, frequently requiring the support of crutches. The sphere of their locomotion is confined within very small limits, the cupboard in which they find their food, the corner of the fireplace, or the wall where they are accustomed to bask in the sun, are all their little world. Even in this small circuit they know not how to avoid any obstacle which may beset their path; the idea of taking another direction to arrive at their point, is beyond the effort of their intelligence. When seated, they fumble their hands restlessly about, or join them together.

Totally devoid of any sense of shame, entirely ignorant of any comfort in cleanliness, the *complete* cretin, if left to himself, too often presents a sight revolting to decency. Entirely destitute of any moral feelings, such beings testify neither pleasure nor sorrow. Indifferent to everything that surrounds them, they display no gratification even at the sight of their own parents, nor do they appear to feel gratitude toward those who afford them the necessities of life. Indolence, timidity, mistrust, and malice, are but too frequently one or all the consequences of this mental deterioration. Yet are there many who, when kindly treated, display

¹ Foderé has divided cretinism into the *complete* and the *incomplete*—in the first there is a total deprivation of the faculty of thinking; in the second, the intelligence is limited in a greater or less degree.

a naturally good disposition, though they may be silly and capricious. Such instances, however, belong to the class of *incomplete* cretins. Others have a lively demeanour, and exactly resemble children, playing with toys, and testifying delight at the sight of coloured objects.

Neglect and ill-treatment invariably aggravate the state of mental degradation. Under their ill effects the well-disposed and incomplete cretin becomes obstinate and malicious; he forgets those little mechanical works which he has been enabled to acquire, and finally sinks into that state of torpor and entire senselessness, which are the characteristic marks of *complete* cretinism.

In this description I have purposely omitted making mention of the affections of the physical functions under which cretins usually labour. Neither have I said anything of the different manner in which their senses and sensations are too often impaired. As these subjects will be discussed hereafter, I have preferred limiting my remarks in this place to their external appearance and habits.

It may be objected that the foregoing delineation will merely suit the severest forms of cretinism, and does not therefore correspond with the majority of cases that actually occur. But it must be remembered that in whatever degree the affection may show itself, if it be solely in the imperfection of one single sense, it is still the same disease. It may be improved by education, by food, or by pure air, yet still it is but a subdivision of the one great class, of which the foregoing account forms the type. A proof of the truth of this assertion may be derived from the fact, that if in early youth these milder forms be neglected or ill treated, they frequently merge into the utmost degeneracy. In investigating the different grades of cretinism, I shall have frequent occasion to refer to its milder forms, and shall more particularly allude to those subjects of it, who are probably better known to the general reader.

CHAPTER IV.

OF THE PROXIMATE CAUSE OF CRETINISM.

HAVING attempted to give the reader a faithful description of a cretin, I must now inquire into the proximate cause of that baneful affection, which, like the fabled head of Medusa, petrifies all those who come within the limits of its fatal influence; which, not content with the usual workings of disease in sapping the foundations of the material body, seeks yet a higher prey, and overwhelms the powers of the immaterial mind.

It is with the greatest diffidence that I approach the discussion of this proposition. For those who build up theories of disease, too often resemble the vendor of pottery in the eastern tale, who, when excited by the fervency of his imagination, in one unhappy moment himself kicked down the weak foundation of his splendid vision. In order to be convinced how many difficulties attend any investigation into the nature of diseases, it is only necessary to bear in mind, the various doctrines on this point which have succeeded one another. If this be true of every form of disease, it is much more so of those, in which the nervous influence is largely implicated. For here we enter upon that region of physiology, which has been the least explored, and regarding which any theory of to-day may be swept away by some discovery of to-morrow. Without an exact knowledge of the properties of the nervous system, it will be impossible to decide how far it may be actively engaged as the cause of its own affections, and consequently of those of the body;

or how far it is passively dependent upon the alterations of the blood.

Such is the embarrassment which presents itself upon the very threshold of an inquiry into the proximate cause of cretinism. For if we admit that the great centre of the nervous system is the chosen seat of reason, we must also allow that the imperfections of the latter must depend upon an anormal state of the brain itself. Now the great and distinguishing character of complete cretinism has been very properly said to consist in "a remarkable torpor of the intellectual faculties and mental affections." Therefore as we consider the mind to be an immaterial agent, not in itself liable to those "thousand natural ills that flesh is heir to," while at the same time its operations may be impeded by the affections of the organs through which it exercises its influences; it will follow, that in cretinism the nervous matter by which the mind acts is *primarily* or *secondarily* affected.

There is, I think, most reason to believe that the latter is the case. Independently of the facility of applying the *fluidist* theory to the elucidation of the nature of diseases in general, there are in the present instance many arguments for showing that the nervous system is only *secondarily* attacked.

In order to come to a just conclusion on this point, it is necessary to watch the progress of the development of cretinism. Now we find that the infant is not born a cretin, but becomes so after the lapse of six months from its birth, and in some cases of one or two years. Although this opinion is opposed to the statement of Foderé, who declares that the majority of infants, who are about to be cretins, have at their birth certain marks indicative of their unhappy lot, yet it is supported by the observations of so many subsequent writers,¹ that I cannot hesitate to give it credit.

¹ Iphofen, Report of the French Commission, Von Gugger, Schausberger, &c.

Dr. Odet² has related of himself, that at the age of three years and a half, the first symptoms of cretinism began to show themselves in his frame. He was however happily rescued from their consequences, by being placed under circumstances more favourable to the development both of mind and body. My friend, Dr. Guggenbuhl, the benevolent founder of the establishment on the Abendberg, has also frequently assured me, that it is impossible during the first months of life to decide whether a child will be a cretin or not.³

It is, however, generally before the completion of the first dentition that cretinism manifests itself. At this period, it is not the nervous system which we observe to be affected, nor are the first glimmerings of intellect as yet clouded by the coming mists of fatuity. It is the affection of the osseous frame which foretells the impending degeneration of the whole body. Almost all the very young children whom I saw at the institution on the Abendberg, presented symptoms of rachitis, and this is so universally the case, that some have not hesitated to regard cretinism as merely a severe form of scrofula. The extremities of the long bones are more especially liable to become attacked; swelling and ramollissement occur at the joints of the elbow and the wrist, of the knee and ankle. Subsequently the bones of the cranium become subject to the same deteriorating influence; to the malformations which thus occur at the base

² "Idées sur le Crétinisme." Dissertation pour obtenir le titre de Docteur en Medecine, par F. Odet, natif de St. Maurice, Republique Valaisanne. Montpellier, 1805.

³ In his "First Report on the Institution upon the Abendberg," Dr. Guggenbuhl thus expresses himself on this subject:—"D'après mes observations, des enfants, qui en entrant dans la vie, se developpent avec avantage, et presentent les apparences d'une santé florissante, tombent malades vers l'époque de la première dentition, quelquefois plus tôt ou plus tard." 1^{er} Rapport sur l'Abendberg, p. 31.

of the skull, and to the pressure upon the origin of the spinal cord and upon the exit of the cerebral nerves, which is said to be their consequence, some authors have not hesitated to ascribe the proximate and essential cause of cretinism. After the occurrence of these degenerations in the osseous system, the abdomen becomes distended and largely developed, the appetite is irregular, being generally voracious, the bowels are obstinately constipated, the skin is cold and flaccid, and the muscular system flabby. It is subsequently to the appearance of these symptoms that the child's intellect is overshadowed. If at this time he be neglected, the progress of his mental deterioration is sure, and in many instances rapid.

If then it be admitted that the nervous influence has no share in causing the development of cretinism, however much it may be implicated in its deleterious consequences, it is probably to the blood that we must ascribe the power of effecting so much mischief. This idea will at least accord with that view of the exciting cause of cretinism, which will be advanced in the next chapter, as the most rational. I shall there endeavour to prove, that the one great and essential source of cretinism resides in the unhealthy atmosphere of the bottoms of narrow vallies, shut in by high mountains, of a moderate elevation above the sea level, and exposed to the direct or reflected rays of the sun. In these situations is engendered an air, damp from the stagnant water, noxious from the want of proper ventilation, and heated by the reflection of the solar rays from the surrounding rocks. It is in a spot so circumstanced that we invariably find the most inveterate forms of cretinism developed. The different contingencies of bad food, want of cleanliness, and neglect of moral education, may one and all lend their influence towards accelerating the march of this degenerating affection: but still it will be found to have its actual origin solely in an impure condition of the atmosphere.

Let this origin of the disease be for the moment admitted ; it will then be requisite, in the next place, to inquire in what manner this altered state of the atmosphere can so poison the fountain of the blood, as to cause cretinism to flow from its source, instead of the streams of force and health. But surely a few words will suffice on this head ; for even the unprofessional reader is aware of the necessity of a pure air in the tender years of infancy. He has compared the sickly and puny children of a crowded metropolis with the infant Herculesees of a country village. The elaboration of the blood is so dependent upon the perfection of the changes which it undergoes during the respiratory process, that where anything occurs to render the latter imperfect, the circulating fluid will be necessarily diseased. Such a consequence must result, where an air so impure as that which prevails in the situations I have described is constantly inhaled into the lungs of the new-born infant. Nor should we overlook the influence of an atmosphere charged with dampness, which, by preventing a healthy transpiration from the cutaneous surface, throws back upon the blood, the insensible but no less important excretions of which it forms the outlet. Or, supposing the air to be free from dampness, similar injurious consequences will arise from its want of proper circulation in these narrow vallies.⁴ To these agents must be added the moist heat which is present in such places,

⁴ “ La vaporisation continuelle, qui a lieu autour du corps des animaux, dans un air qui n’est pas saturé d’eau, leur fait une petite atmosphere particuliere, plus humide que le reste de l’air. Or les courants renouvellent les couches, qui environnent immediatement le corps, et les remplacent par un air plus sec La presence d’un air relativement sec augmentera la transpiration. Elle diminuera au contraire dans un air calme, parccque les couches ambiantes en se renouvelant plus lentement, seront plus impregnées d’humidité.” Vid. “ De l’influence des Agens physiques sur la Vie,” par W. F. Edwards, M.D. Paris, 1824. Chapt. vii. § 3.

relaxing the fibres of the body, and rendering it still more unable to withstand the deleterious effects of a damp and stagnant atmosphere.

The natural consequence of these injurious agencies must be an impoverished state of the blood. The adult in whom the circulating fluid has only to supply the waste of a frame, in which the different systems have already assumed a fixed and lasting character, may be enabled to resist their baneful influence. But this is not always the case, for we sometimes find that when individuals, whose bodies have arrived at their complete development, go to reside in a district, where, from the condition of the atmosphere described above, cretinism is endemic, they subsequently become affected with its mildest form of goitrous excrescence.

In the infant, however, the demands upon the blood are of a more important, and, if I may so speak, more difficult character. Here the circulating fluid has not only to supply a previous waste, by furnishing materials similar in every way to those which before existed, but it is required to deposit positively new matter; and although the organs be already in a state of existence at the time of birth, yet is their volume at that period so very small when compared with the bulk which they subsequently attain, that their development must very much depend upon the quality of the new matter which is then added to them.

We know also that in some instances the character of the component parts of the frame is much altered after birth. Let us take for instance the case of the osseous system. The extremities of the long bones are not as yet ossified, but consist of cartilaginous epiphyses; and the bones of the cranium are also incompletely developed. Now it is in these very points that the first symptoms of cretinism display themselves, as I have stated above, by the deposition of a strumous matter in the place of healthy bone. Here the

situation of the part renders the deterioration appreciable to our senses. And may we not infer that the same degeneration which affects the bones, is producing equal injury in the whole frame?

If then it be allowed, in the first place, that such a condition of the atmosphere, as is found in deep and narrow alpine vallies, must produce an impoverishment of the blood; and, in the second place, that the blood so impoverished is unfitted for the development of a healthy being, while it naturally produces such symptoms as accompany cretinism; are we deducing too much, when we assert the proximate cause of cretinism to be “*an imperfect development of the individual, dependent upon the condition of the blood, which is deficient both in quality and quantity.*”

CHAPTER V.

ON THE EXCITING CAUSE OF CRETINISM.

I HAVE stated in a preceding page that I should endeavour to prove, that the atmosphere which is engendered at the bottom of deep and narrow alpine vallies, is to be regarded as the essential source of cretinism. Having assumed this as granted in the last chapter, it will be proper to devote this one to the discussion of a proposition which others may feel disposed to reject as unfounded.

As, however, different *exciting causes* have from time to time been brought forward by authors of merit, by whom they have been adapted to their own peculiar views and theories, it will be best, in the first place, to give a general summary of the various opinions which have been entertained upon this point. It will thus be easier to judge of the correctness of the assertion, which it is the object of the present chapter to establish.

Before, however, proceeding further with the investigation of this subject, it is necessary to state, that I shall content myself with seeking but one *exciting cause*, as the source both of cretinism and goitre. The intimate connexion of the two diseases appears at the present day to be so universally admitted, that authors have ceased to separate their causes. What degree of relationship they may hold one to another, will be more conveniently discussed in a future page.

It will probably be considered superfluous to say anything upon the claims of snow water to be regarded as the pre-

disposing cause of goitre and cretinism. For it is a well-known fact, that neither of these two affections prevail among those who live immediately upon the confines of glaciers, and drink of the waters which have their origin in those reservoirs of snow and ice.

It often happens that when any particular opinion upon the origin of a disease is found to be erroneous, its true source is supposed to lie in the opposite extreme. This was the case with the subject under discussion. For when the purity of snow-water was found to be incapable of occasioning goitre, its production was charged upon the impurity of water containing in solution calcareous matter. In his "Travels in Switzerland," written in 1776, Mr. Coxe supports this view of the question. He says—"The strongest proof in favour of this opinion is derived from the following facts. A surgeon, whom I met at the baths of Leuk, informed me that he had not unfrequently extracted concretions of tufstone from several goitres, and that from one in particular, which had suppurated, he had taken several flat pieces, each about half an inch long. He added, that the same substance is found in the stomachs of cows, and in the goitrous tumours to which even the dogs of the country are subject."¹ The same fact is also asserted by some other authors; and it is mentioned by the great physiologist Haller,² that calcareous and osseous substances have been met with in the dissections of enlarged thyroid glands. Foderé, however, who took great pains to investigate the causes of goitre and cretinism, was unable to discover these depositions in any of the goitres which he dissected. He also relates that M. Billon, a surgeon at Grenoble, having made several examinations of these tumours, had not been more successful than himself in finding such concretions.³

¹ Vid. Travels in Switzerland, Letter 35, by William Coxe, M.A.

² Halleri Physiologia. Lib. ix. sect. 1. Larynx.

³ Traité du Goitre et du Cretinisme, § iv.

But supposing that such depositions have occasionally been met with in goitres, (and there is no reason to doubt this fact, inasmuch as they have been found at different times in all parts of the body,) yet this does not at all tend to prove that either the depositions, or the tumours in which they occur, have their origin in calcareous waters. For the salt which such waters hold in solution, chiefly consists of sulphate of lime, whereas it is the phosphate of lime, the material of bone, which occasionally forms the hard nucleus of goitrous excrescences. Moreover, so small a portion of sulphate of lime is dissolved in water, as not to exceed, according to the experiments of Foderé, more than three grains in a pint, at the usual temperature of the streams in the Swiss vallies. It is difficult to imagine how this small proportion of mineral ingredient, after having passed through the meshes of the mesenteric glands, should find a resting-place in the thyroid.

Some writers, however, without referring to the concretions which have been found in goitres, still assert that these swellings are due to the influence of alpine waters. Among these latter I may mention Dr. Johnson, who remarks, that "we trace bronchocele along the whole course of the Rhine from Schaffhausen to Cologne, it gradually decreases as we descend the Rhine: and among those who inhabit the banks and drink the waters of the upper, or turbid Rhone, (in the Valais,) there are twenty goitres and cretins for one that can be seen on the banks of the lower or filtered Rhone." This circumstance, in his opinion, forms a strong ground of presumption in favour of the goitrefactive influence of alpine waters.⁴

Now, these very facts brought forward by Dr. Johnson, appear to me to confirm the idea, that goitre and cretinism, instead of being due to the influence of alpine waters, are

⁴ Med. Chir. Rev. vol. vi. p. 422. Quoted in the article on "Endemic Diseases," in the Cyclopædia of Practical Medicine.

rather owing to the *warm damp atmosphere which is engendered at the bottom of deep and narrow vallies*. Is not the whole course of the Rhine from Schaffhausen to Cologne more or less exposed to the contamination of such an atmosphere, inasmuch as that river traverses a chain of vallies surrounded by lofty hills? These vallies may be more or less extensive, and their sides more or less elevated, yet they so far possess one common character, as to have given to geologists the idea that they originally formed the successive basins of as many lakes. Such a disposition of the earth's surface is peculiarly adapted to the development of cretinism in some shape or other, owing to an atmosphere which is impure from want of circulation, and heated by the reflection of the sun's rays from the surrounding rocks. The waters which are drank by the inhabitants of this long line of country must also vary in a high degree. This will be evident when we consider through how many different strata of rocks these waters percolate. For the people do not, of course, drink of the Rhine itself, but of those various sources which flow towards that river. These arguments will apply with still greater force to the case of those who live in the vallies of the Upper Rhone, inasmuch as they are still more exposed to those atmospheric conditions which I believe to originate cretinism. But why is it found that goitre ceases on the Rhine at Cologne, and below Geneva on the Rhone? Because both the rivers have below those places reached a wide open country, where the air is no longer subject to those influences which prevail in the upper part of their course.

In order to ascertain how far the assertion of those who attributed goitre to the use of calcareous waters was borne out by fact, Foderé undertook the examination of the waters which are principally used by the inhabitants of La Maurienne. He not only examined such as were drank in districts subject to goitre, but extended his investigation to

those, which supply villages free from this affection. The results of his inquiry shall be given in his own words.

“The waters which supply the towns of St. Jean, St. Sulpice, St. Remi, St. Pierre, &c., where infinitely more goitrous persons are met with than in the rest of La Maurienne, are much more pure (giving less precipitate by alkalis, and leaving less residue after evaporation) than the waters of La Haute Maurienne, where goitre does not exist. Indeed the case could not be otherwise, for the towns I have mentioned make use of the very pure water of the river Arc, or of the springs which rise in the granite rocks of the neighbourhood. On the contrary, the villages of La Haute Maurienne, where goitre does not exist, are placed between an immense quarry of gypsum extending many miles, and the Great and Little Cenis. So that the waters which are used in this latter district, must filter through blocks of gypsum and limestone, and consequently carry with them as much sulphate of lime as cold water can dissolve. Nevertheless, they do not produce goitre.”⁵ M. G. Marchant, who has studied the cause of cretinism in his native Pyrenees, does “not hesitate to assert, that in that country at least, the use of calcareous waters cannot be regarded as an *indispensable* cause of *cretinism*.”⁶

It is, I am aware, the vulgar opinion, in districts where cretinism is endemic, that goitre is constantly due to some peculiar condition of the water. But those who give this reason for its prevalence, are generally little qualified to judge of the truth of their opinion. It is quite unnecessary for me to say, how dangerous it is to give credit to these popular assertions, which are almost always founded upon the argument of *post hoc, ergo propter hoc*.

Upon the whole, I cannot think that those who advocate

⁵ *Traité du Goitre et du Cretinisme*, § xxxi.

⁶ “*Observations faites dans les Pyrenees, pour servir à l'étude du Cretinisme*.” Paris, 1842. In 4to. p. 53.

this theory as to the exciting cause of cretinism, have at all proved their statement; for although some facts may appear to favour their hypothesis, they are opposed to other and more numerous facts, which prove them insufficient to establish its correctness.

It is the opinion of some authors, that *hereditary transmission* constitutes the real exciting cause of cretinism. The influence of this principle, in giving a predisposition to many and various disorders, is so generally allowed at the present day as to need no discussion. But while we admit its force in the present instance, all we can gain by this admission will be the establishment of the exciting cause of cretinism in individual cases. It may be said that A. B. was born of cretinish or goitrous parents, and has inherited from them a cretinish or goitrous taint. In a district where this affection is endemic, it will be easy to bring forward very many instances of such an inheritance; so that those who adopt this theory will find no difficulty in crowding their pages with examples in its favour. But while we allow this transmission of cretinism, we are still as far as ever from its real source; to seek which we shall have to mount the successive steps in the scale of hereditary descent, until we arrive at that point from which each family dates the origin of its degeneration. Then, and not till then, shall we start in search of its actual predisposing cause. No one will doubt that gout and consumption are hereditary diseases, but still it is not pretended that they have had their origin in this transmission; otherwise, why does the latter prevail in certain latitudes, and the former in certain classes of society? The correctness of this view was recognised by Foderé, who, when advocating that the dampness of the air was the cause of goitre, but that cretinism was occasioned solely by hereditary transmission, felt himself obliged to refer to the condition of the atmosphere, as being through goitre the cause of cretinism also. “*Nous croyons,*” he says, “*d’avoir suf-*

firmement prouvé, que cette cause est très puissante pour produire le goître ; mais il a été dit, que la propagation du cretinisme suppose toujours des parens goitreux : donc, si l'humidité atmospherique est la cause du goître, elle l'est également du cretinisme."⁷

But besides the necessity of seeking a primary source in these cases of hereditary transmission, many instances occur, where parents entirely free themselves from all taint of cretinism, and in whose family this disorder has never appeared, have yet had cretinish children. Ackermann brings forward examples of children in the canton Valais, who were cretins in the highest degree, but whose fathers and grandfathers had not suffered from cretinism. Schausberger, who has had opportunities of studying cretinism along the course of the Danube, states, that strangers who settle in districts where it is endemic, although themselves healthy, are liable to beget children the prey of that affection. "Les etrangers," says Saussure, "qui viennent s'établir dans le pays, où cette maladie est endémique, ne la prennent jamais, mais leurs enfans y sont sujets, comme ceux des indigenes."⁸ Iphofen has moreover quoted instances, in which complete cretins have begotten sound and healthy children, who have subsequently grown up into perfect men. Finally, M. Rambuteau, under whose directions the commission for inquiring into the causes of cretinism in the Valais was conducted, says, "Des cretins mariés avec des individus bien portants ont engendré des enfans sains et spirituels, tandis que des parens d'une santé parfaite ont produit des cretins : d'où cette conclusion, que le cretinisme ne parait pas être un vice hereditaire."⁹

In the account of authors who have written upon creti-

⁷ "Traité du Goître et du Crétinisme," § 121.

⁸ Voyage dans les Alpes," vol. ii. p. 480.

⁹ Quoted by the writer of the article "Crétinisme," in the Dictionnaire de Médecine. Paris, 1835. Vol. ix. p. 297.

nism, I have stated that Dr. Von Gugger lays particular stress upon the damp, low, and dark dwellings which he constantly met with in cretinish districts. These he considers quite sufficient to act as an exciting cause of the complaint."² The same circumstance is adduced as a source of cretinism by Dr. Reeve, who states that "the disease is looked upon as belonging to indigence and poverty, for in every place where he saw cretins many well-looking persons of both sexes resided, and these were, without exception, persons of a higher class in society, who lived in better houses, and could supply both their moral and physical necessities."³ But do not indigence and poverty exist in other countries to an equal degree, which yet afford us no instances of cretinism? It is far from my intention to deny the influence of these contingencies in rendering the system more susceptible of impression from the actual exciting cause. Holding, as I do, that the nature of the disease is to be found in an impoverishment of the blood, everything which tends to produce this condition will necessarily make the infant more liable to its attacks; such must be the consequence, where there is a deficient supply of the necessities of life. But I hold, that without the peculiar condition of the atmosphere which prevails in alpine vallies, want, though carried to any extent, would never produce that disorder of the mind and body to which the term *cretinism* is properly applied.

Procreation during drunkenness forms also an item in the long list of the predisposing causes, to which from time to time cretinism has been attributed. That such an opinion

² "In beziehung auf die erzeugenden ursachen legt er ein besonderes Gewicht auf die Wohnungen, die er immer dunkel, dumpfund feucht fand."—Quoted by Rösch, in his "Untersuchungen über den Krætinismus."

³ Quoted in the article "Endemic Diseases," in the Cyclopædia of Practical Medicine.

should obtain among the vulgar need not astonish us: but it is certainly surprising that an author like Dr. Rösch, who has devoted so much study to elucidate the nature of cretinism, should place this among the foremost of existing causes.⁴ This proposition he advocates merely upon the grounds of having seen some cretinish children who had been begotten by fathers addicted to drunkenness. Such a vice is unfortunately so common, that in districts where cretinism is endemic, most probably many habitual drunkards may be found in the parents of affected children. But as Foderé very properly remarks, no less abuse of spirituous liquors occurs in the mountains than in the vallies, and yet in the former this peculiar disorder never shows itself as one of the consequences of drunkenness. In Ireland, as is generally admitted, the people are very much addicted to intoxication; yet I am not aware that that country has offered any instances of actual cretinism, although the frequent occurrence of idiotcy has been attributed to the great abuse of whiskey.

It may be proper to notice another circumstance, which has been quoted as capable of acting as a predisposing cause

⁴ Dr. Rösch thus expresses himself on this singular idea:—Sind die früher erzeugten Kinder kretinisch, die später erzeugten gut, oder ist aus vielen nur eines oder das andere in der Entwicklung zurückgeblieben oder entartet, so kann eine vorübergehende unglückliche Verfassung der Gatten, besonders des Mannes, dessen Kraft das schlafende Ei zum selbständigen Leben wecken muss, im Momente der Zeugung angeklagt werden. Im Zorne werden wohl nicht viele Kinder gemacht. Desto häufiger geschieht die Erzeugung im Rausche. Völlige Betrunktheit lähmt die Zeugungsorgane, und macht Begattung von Seiten des Mannes unmöglich: ein weniger hoher Grad von Betrunktheit dagegen schwächt nur die Zeugungsfähigkeit, die Lust ist vorhanden, aber nicht die gehörige Kraft, der Act wird mit geringerer Energie vollzogen, häufig nur erzwungen, und die Folge ist im glücklichen Falle Unfruchtbarkeit des Beischlafes, im unglücklichen Falle die Erzeugung schwächerer und schwachsinniger Kinder.—Vide opus citatum, p. 200.

of the cretinish degeneration. I allude to the influence of accidents, or impressions upon the mother during the period of gestation. It is certainly quite in accordance with well-ascertained facts, that the disgusting sight of a deformed cretin may produce such an effect upon a pregnant woman, as to influence the development of the foetus which she carries in her womb. But in this case, the infant would bring with it into the world a congenital degeneration, whereas in endemic cretinism this does not ordinarily commence until at least half a year after the birth. Such an instance can therefore only be regarded as an exception to the general rule. Besides, the shock produced by such a sight presupposes the existence of cretins; and thus we are as far as ever from the original source of the disorder.

It has been remarked by Dr. Coxe, that "in reasoning upon this, as well as on similar subjects, where a cause is sought for capable of producing a certain effect, it is necessary to establish a primary or general cause, which *always* and *necessarily* exists, wherever that effect is produced; and to exclude those circumstances which do not *always* and *necessarily* exist, wherever that effect is produced." To this rule I shall endeavour to adhere, in discussing what I consider to be the real exciting cause of cretinism.

This cause I have already stated to be the warm, damp, and stagnant air, which is engendered in narrow alpine vallies, shut in by lofty mountains, and at a moderate elevation above the sea level. In accordance with the rule laid down above, I shall hope to prove that this cause *always* and *necessarily* exists where cretinism is endemic, and that the intensity of that disorder is in proportion to the intensity of the alleged cause.⁵

⁵ It is necessary here to remark, that this cause is only intended to embrace those forms of cretinism which are *endemic*. It is not therefore pretended, that this condition of the atmosphere must exist where *sporadic* cases of goitre occur. The thyroid, like other glands, is liable to become

In order correctly to ascertain the truth of this proposition, the safest plan to pursue will be to take a survey of those districts where cretinism is endemic, and to inquire, whether in them such a state of the air is invariably to be found. The valley of the Upper Rhone, the valley of Aosta, and La Maurienne, deserve to be considered first, as having always possessed the unenviable notoriety of being the great *nurseries* of cretins. Those who, in search of pleasure or information, have travelled along the grand routes which follow the course of these vallies, will have observed that they possess many characters in common. They are shut in by two lofty chains of mountains, their breadth varies from one to three miles, and their sinuosities form a number of successive basins; they are traversed in their whole extent by rivers, which, when swollen by the melted snow, are very liable to overflow their banks, producing large and pestilential marshes.

In the report of the French commission, to which frequent reference has been made, M. Rambuteau observes, “ que les Gorges, on se trouvent le plus des crétins, sont étroites, entourées de montagnes, exposées quatre mois de l’année aux rayons d’un soleil ardent, réfléchis et concentré par des rocs brulans; qu’elles sont habituellement soumises à l’influence pernicieuse de l’Auster ou du Vent du Midi.”—M. Ramond, in his notes to Mr. Coxe’s travels in Switzerland, bears witness to the same concurrence of noxious influences. “ Between the upper and the lower Valais,” he says, “ there is a large and level basin, which is often inundated by the Rhone, and ever scorched by the beams of the sun, reflected in every direction from the perpendicular walls of the neighbouring mountains. The people of this district are the

enlarged under the influence of different causes; nor is there any reason to attribute such instances of bronchocele to a taint of cretinism, or to consider them as occasioned by any *one* exciting cause.

laziest and weakest of the whole Valais; here it is that one meets with goitreux and idiots.”⁵

How similar is the account given by Foderé of the numerous vallies, which occur along the course of the foaming Arc in La Maurienne:—“ La temperature de ces Vallées est plutôt chaude que froide, à cause de leur étroitesse et des rocs qui les bordent, et qui faisant fonction de réverbère sur les rayons du soleil, y concentrent la chaleur depuis le matin, jusqu’au soir, tellement qu’ils sont encore chauds, lors même qu’il ne fait plus de soleil. Cette temperature douce donne une assez grande fertilité au sol de ces vallées, mais la prodigieuse quantité d’arbres fruitiers, dont il a été de tout temps garni, jointe aux marais, qui s’y rencontrent naturellement, à l’évaporation des eaux de la rivière, en rendent nécessairement l’atmosphère très humide—de sorte que nous pouvons dire qu’il y a constamment en été une chaleur humide, qui si elle est utile à la végétation, est très nuisible aux animaux, par le relâchement, qu’elle occasionne.”⁷

The same author made several hygrometrical observations in the valley of Aosta, and invariably found that the moisture of the atmosphere was in equal ratio with the number of cretins.

Another spot where cretinism is endemic, is the lower part of the town of Freiburg. Those who have visited this town, will remember the deep gorge, through which flows the river Saone, which is now crossed by a magnificent suspension-bridge. It is in the dwellings which are to be found in this deep ravine, and chiefly at its bottom, near the water’s edge, that the disease principally prevails. This spot is subject to precisely the same local influences, which have been described as existing in the vallies of the Rhone, Aosta, and La Maurienne. Dr. Berchtold Beaupré, a phy-

⁶ Coxe’s Travels in Switzerland. Note by M. Ramond to “Letter” 35.

⁷ Traité du Goître et du Crétinisme, § 105.

sician of Freiburg, who has had constant opportunities of watching the development of cretinism in the low parts of that town, attributes its origin "to a deficiency of currents of air, reflection of the sun's rays from the cliffs, a damp suffocating atmosphere, constant evaporation from the river, and from the swamps which it leaves after having overflowed, and to the moist heat which is the consequence of these united circumstances."⁸

Cretinism and goitre are also endemic among the mountainous districts of the province of Salzburg. Indeed, I hardly remember in any part of Switzerland to have observed so many cases of goitre as in the vallies near Ischel. Here precisely the same atmospheric influences are in action to produce a similar malady. The vallies are deep, shut in by lofty mountains, and traversed by rapid rivers, which frequently overflow their banks. The rays of the sun are reflected from the surrounding rocks, and the air is damp, moist, and stagnant. Here, also, from actual observations upon the development of cretinism, the brothers Wenzel were led to refer its predisposing cause to such a condition of the atmosphere. The people, however, are more industrious, their habits more sober, their love of cleanliness greater, and their moral and physical education more attended to by the local authorities. These favourable circumstances oppose the progress of the cretinish degeneration, and its effects are therefore chiefly displayed in its mildest modification of goitre.

If we extend our observations to the vallies of the Pyrenees, the same cause will be found to produce the same effects. M. Marchant, although unwilling to attribute cretinism exclusively to atmospheric agency, yet assigns to that cause the largest share in the production of the disorder. "L'humidité de l'atmosphère," he remarks, "si on l'invo-

⁸ Dissertation sur le Crétinisme, par le Berchtold Beaupré. Fribourg, 1843.

quait comme une cause déterminante nécessaire, nous permettrait d'expliquer assez facilement, pourquoi le goître et le crétinisme ne sont endémiques, que dans les vallées basses et profondes.”⁹

In fact, wherever we find cretinism to prevail endemically, there mountains, narrow vallies, and rivers liable to overflow, form the main features of the landscape. Such a disposition of the earth's surface is most qualified to engender a warm, damp, and stagnant atmosphere. The more lofty the mountains, the more numerous the swamps left by the overflowing river, and the more exposed the valley to a southern aspect, the more inveterate is the disorder. As we ascend the sides of the mountains on the one hand, or follow the river into the wide and open plain on the other, the affection disappears. But it does not disappear suddenly; a regular gradation in the intensity of the disorder may be traced from the bottom of the vallies, where it is at its height, into the plain on one side and up the mountains on the other. De Saussure has called attention to this important fact, which he observed to prevail in the valley of the Rhone, by the following remarks:—“J'ai placé ce chapitre ici, parceque la descente du St. Bernard fournit l'exemple le plus frappant de cette observation. Les habitans du Bourg St. Pierre, ceux d'Aleve, ceux meme de Liddes, n'ont pas la moindre apparence de crétinisme. A Orsieres les teintes commencent à se plomber, à St. Branchier les symptomes deviennent plus marqués—à Martigny on voit beaucoup de gens, qui en sont affligés dans un très haut degré et très peu qui n'en aient quelque atteinte; et le village le plus infecté est encore plus bas de l'autre côté du Rhone. Passé ce village, la maladie diminue, on en trouve pourtant encore à St. Maurice, à Bex à Vevay même. Puis dans le milieu de nos plaines, à Lausanne, Morges Gèneve on ne voit absolument plus de cretins, il reste seulement quelques goîtres. On observe les

⁹ Observations faites dans les Pyrénées, pour servir à l'étude des causes du crétinisme.”—Paris, 4to. 1842.

mêmes gradations dans la vallée d'Aoste—à Courmayeur point de crétins, point à Morges, quelques commencements à La Salle, puis une augmentation graduelle jusqu'à Ville-neuve, où semble être le maximum. Il y en a cependant encore beaucoup à la cité. Mais, passé la cité, ils diminuent graduellement jusque dans les plaines de la Lombardie, où l'on n'en voit absolument plus. Les mêmes nuances se voient dans la Maurienne, et en general dans toutes les vallées des Alpes, sujettes à cette maladie.¹

Even those who assert the influence of calcareous waters in producing cretinism, bear witness to the fact, that elevated situations escape the scourge, while it affects the inhabitants of the low vallies. Thus Dr. M'Clelland,² in his account of goitre, as it occurs in the district of Shore, informs us that it is most frequent in the richest and most fertile parts of that province, (or in other words along the vallies,) while it seldom attacks those who dwell upon the steep sides of the mountains.

It may be objected, that where a cause is so universally diffused, as it must be where it acts through the medium of the atmosphere, the whole population of the infested districts will be more or less affected. But it has been already remarked in the preceding chapter, that this cause is only in operation during the first years of life. Those, therefore, who go to reside in these districts after the completion of the second dentition, will be protected against an invasion of the complaint.³ Those, also, who have been born there,

¹ Voyage dans les Alpes, vol. ii. p. 487.

² Geology of Kemaon. Dublin Journal, 1837.

³ Since writing the above passage I have met with the following curious account of the degeneration of a whole family into cretinism, consequent upon its removal into a cretinish district. I have translated the relation of the occurrence as it is given in "the Journal of the Imperial and Royal Society of Physicians in Vienna. 1844." (*Zeitschrift der K. K. gesellschaft der Artze in Wien* 6^{tes} Heft. 1844. S. 461.)

"The actual proprietor of the domain Albechshen Hube was formerly in the army. After purchasing that estate, he went to reside upon it with

but who have been transplanted during the years of infancy to a loftier region, will, as experience amply proves, escape the fearful consequences of mental and bodily degeneration. Again, as I have endeavoured to show when discussing the proximate cause of cretinism, every thing which is capable of strengthening the child's frame will enable it more or less to struggle against, and in many cases to overcome the effects of the disorder. Still, in spite of the exemption of these privileged classes, it is only necessary to enter a village where cretinism is endemic, to be convinced that some universal depressing principle is in active operation. Independently of goitre and idiotcy, there is something in the whole character of its inhabitants which shows them to be under the influence of this pernicious agent. There is a certain languor in their demeanour, a peculiar caste of features, a sallow complexion, a large head, and small stature, all which denote that circumstances are unfavourable to their perfect development. I have myself frequently had opportunities of testing the truth of this delineation, which is drawn in much more glowing colours by Saussure—"J'oserais assurer," he observes, "qu'un homme un peu physionomiste arrivant à Martigny un jour de foire, où les habitants des hauteurs sont mêlés avec ceux des basses vallées, pourrait sur la seule inspection de leurs traits décider, à très peu près, de la hauteur à laquelle est né tel ou tel individu. Car ceux, qui sont nés dans les endroits, où cette maladie est endémique, lors même qu'ils ne sont point

his first wife, both being quite strong and healthy. The latter afterwards died with an enlarged throat, and in a state of half-cretinism. The proprietor, with his second wife now living, are both become half-cretins. The five children of the first marriage are completely goitrous and affected with the cretinish disease. The children of the second marriage are, up to the present time, strong, healthy, and lively, but they must expect in a few years to undergo the same fate as those of the first marriage, for these latter were also healthy during the first years of their life."—For the truth of this statement I should be sorry to be held responsible.

imbecilles, ont presque toujours un mauvais teint, et quelque chose d'eteint et de flasque dans toute l'habitude du corps." ⁴

I would finally ask, why it is that the removal of infants from the vallies up to the mountains produces such happy results? Does not this prove, that the state of the atmosphere is the sole necessary cause of the development of the disease; inasmuch as all the other exciting causes which have been brought forward exist in an equal degree on the mountain's height, as in the deepest recess of the valley.

⁴ Vide opus citatum.

CHAPTER VI.

OF THE DIFFERENT FORMS UNDER WHICH CRETINISM SHOWS ITSELF.

CRETINISM, then, I consider to be *a mental or bodily degeneration, having for its proximate cause an impoverished condition of the blood, and for its predisposing cause, the damp, warm, and stagnant atmosphere of alpine vallies.*

I have said *mental or bodily* degeneration, inasmuch as the body or the mind may be, either one of them, affected independently of the other; or both may be simultaneously and equally attacked, as in the complete cretin.

To obtain then a correct idea of cretinism, it is necessary to regard it as capable of assuming a certain number of forms, according as it affects particular portions of the physical or nervous constitution of the individual. These forms constitute so many modifications of one common affection, which embraces all the different shades of degeneration from goitre, to complete cretinism. They all have in common the same predisposing, and the same proximate cause, only differing in intensity; in early life one grade is liable to pass into another, while in hereditary transmission any one may beget the rest.

In accordance with this view of the subject, I shall in the present chapter consider cretinism as capable of showing itself under any of the following forms; viz. 1. Goitre. 2. Affections of the bodily development. 3. Affections of the senses. 4. Affections of the mind. All these disorders may exist together, or in different combinations; the latter

being generally the case. But as instances occur where one isolated form is met with, each modification will be discussed separately.

1. *Of goitre.* I have placed goitre first upon the list of the different modifications of cretinism, as it may be considered the first step in the scale of degeneration, the point at which imperfect development commences. As long as the affection is entirely confined to goitre, the individual is in no way disqualified from taking an active part in the concerns of life. His mind is unclouded, and his physical powers are not necessarily impaired. It is true that goitre is very frequently accompanied by a cachectic frame of body, but this connexion does not by any means exist as a matter of course. In many vallies of Switzerland, where the exciting causes of cretinism are not sufficient to produce the severer forms of that disorder, many individuals, particularly women, although affected with goitres of a considerable size, will be found among the most active part of the population.

Although the close connexion of goitre with cretinism is now almost universally admitted, it may be as well to recount the reasons why, in the first place, they are considered to constitute but one disorder, and why, in the second place, the former is regarded as a modification of the latter.

Wherever cretinism is endemic, there is goitre found to exist endemically also.¹ Their predisposing causes too, whatever they may be, are identical, for in districts subject to cretinism, the two affections, even when separate, make their appearance under the influence of the same circumstances; and where goitrous excrescences abound in a spot which is

¹ The converse of this proposition, however, does not hold good, for it requires a more powerful cause to produce mental imbecility (or cretinism, as vulgarly understood,) than that which is sufficient for the development of goitre alone.

free from other forms of cretinism, the same causes are still in operation, though in diminished intensity.²

In the same individuals goitre frequently accompanies other and severer forms of cretinism. In this case it evidently constitutes but a part of one common disorder. Few adult cretins are entirely free from swellings of the thyroid gland. It is a singular fact, however, that those individuals in whom the symptoms of cretinism are carried to the highest degree, are more frequently exempt from these tumours than those in whom the degeneration has not proceeded so far.

Another, and a curious proof of the connexion of goitre with cretinism may be found in the fact, that children who subsequently become the victims of this fearful malady, are not unfrequently born with considerable goitres. The swelling quickly disappears: but such a child lapses after a time into confirmed cretinism, and then at a later period the bronchocele reappears, no more to vanish, and increases into a disgusting excrescence.

If any further argument is required to show that goitre and cretinism differ only in degree, it may be mentioned that goitrous parents frequently beget cretinish children, while the latter may in their turn become the parents of an offspring merely affected with goitre. It may be readily inferred, that two disorders, which are thus capable of transmitting one another, must be very closely allied in their nature.

The intimate union of these two disorders being thus established, it remains to be seen what is the relationship which

² “M. Rambuteau observe encore, que partout où il y a des crétins, il y a aussi des goîtreux, mais que ces derniers se rencontrent dans les lieux, où on ne trouve pas des crétins: ce qui porte cet observateur à penser que le principe des deux maladies est le même, et qu’il est seulement plus actif là où règnent le crétinisme et le goître, et plus faible là, où le dernier existe sans le premier.” Vid. the article “Crétinisme” in the Dictionnaire de Médecine.

one holds to the other. It has been already remarked, that Foderé regarded cretinism as the sequel of goitre, in consequence of the organic changes which the latter produces in the constitution during successive generations. His words are, " Il est vraisemblable aussi qu'un goître très volumineux et très étendu en largeur a donné pour la première fois naissance au vice d'organisation, qui fait le crétinisme, lequel allant toujours en empirant, produit dans la suite des générations, le premier crétin parfait, qui a existé et dont la race s'est propagée jusqu'à nous par une suite de cette légèreté, avec laquelle l'ordre civil a jusqu'ici traité l'union des deux sexes." ³

This opinion appears to me to be easily controverted. For if we carry out the principle of progressive deterioration, it would follow that every successive age would produce forms of cretinism more and more degraded, and at the same time more numerous, as the series of years increased. But this is opposed to fact; Foderé himself informs us, that during the twenty or thirty years preceding the one in which he wrote, their number at Aosta had considerably diminished. M. Rambuteau adds his testimony to the same effect with regard to the proportion of cretins in the Valais. Moreover, the idea of a gradual advance in the severity of diseases, is contrary to the general law which regulates their progress. According to this law, their tendency is rather towards an amelioration and a loss of virulence, than towards an increase of intensity. Again, how is it to be explained, why in certain districts, where the causes of cretinism act in a modified degree, goitre is constantly endemic, and yet cretinism never makes its appearance? Finally, foreigners, upon going to reside in a district where cretinism prevails, are liable to beget children, who fall its victims, although their parents have never suffered from goitre. It

³ Traité du Goître et du Crétinisme, § 74.

would be easy to quote other instances, which prove the fallacy of Foderé's supposition.

It appears a much more rational idea to consider goitre as merely one of the forms under which cretinism shows itself. For since cretinism produces such various effects, at one time affecting the body, and at another time the mind, it is not surely unfair to add the swelling of the thyroid gland to the number of those other bodily alterations, which are generally admitted to be its immediate consequences.

With the exception of those instances in which infants are born with goitres that disappear for a season, this affection very seldom supervenes before the child has passed its two first years. The most usual period of its appearance is from the eighth year of age up to the completion of puberty. It may, however, commence much later either in the natives of a district where it is endemic, or in strangers who migrate to such a district at a comparatively advanced age.

When the goitre is once developed, it generally remains for life. The instances of its removal, either by operation or by medicine, are very rare. As long as its increase is confined within moderate limits, although it may be unsightly, yet it occasions but little inconvenience. When, however, its growth is excessive, it may become the cause of serious and even fatal disorders. By the pressure which it produces upon the blood-vessels of the neck, it may occasion venous congestion about the head and face, causing that livid colour of the features which so frequently accompanies bronchocele; while in other cases it may even prove the cause of cerebral apoplexy. Much stress has also been laid by some writers upon the pressure thus exercised on the carotids, and the consequent diminished supply of arterial blood to the brain. It has been imagined, that owing to a contraction of the calibre of the arteries of that viscus, consequent upon this diminution of their contents, the cerebrum itself would become contracted and hardened also. It has

been further stated, that this hardened condition of the brain is the cause of the mental imbecility which characterises cretins of the higher degrees. But it may be answered to this, that the most complete cretins, or those in whom this imbecility has reached its highest point, are more frequently free from goitre, than those who have still some glimmerings of reason.

A goitre of considerable size may also impede respiration by pressing upon the trachea, and, according to Rösch, may thus even occasion death.⁴

2. *Affections of the bodily development.* Although goitre occasionally exists alone, thus affording the only sign of the taint of cretinism, yet it is more frequently united to other alterations of the bodily structure. The arrangement which I have adopted, obliges me here to mention these affections of physical development; but I have already enlarged so much upon them in the description which I have given of the external appearance of a cretin, that it will be unnecessary to touch upon the subject further in this place. The progress of the structural alterations has been discussed in the chapter which is devoted to the inquiry into the proximate cause of cretinism. It is therefore only necessary here to refer to the fact, that these physical changes generally precede those mental and moral deteriorations which remain to be considered.

There is, however, so great a similarity between the structural alterations which accompany cretinism, and such as are the result of scrofula, as might reasonably occasion some suspicion as to their identity. Dr. Rösch carries this resemblance so far as to assert, that "cretinism might be called

⁴ "Die Behinderung der Respiration wird anfangs nur merkbar bei stärkeren und anstrengenderen Bewegungen, steigert sich aber zuweilen zu wahren Keuchen und zu Erstickungsanfällen, welche den Tod herbeiführen." Untersuchungen über den Kretinismus, p. 134.

the most complete, or, if it may be so expressed, an universal scrofula.”⁵ It is necessary therefore to say a few words upon the characters which distinguish these two affections. The frequent occurrence of goitre as a peculiar scrofulous swelling of a gland, has been appealed to in support of this close connexion of the two diseases. But bronchocele is not the result of scrofula, for scrofulous glands are liable to inflammation and consequent suppuration, whereas goitre remains in a condition of torpid inactivity, having no tendency towards a crisis. A scrofulous individual is generally remarkable for acuteness and excitability of the mind, although his bodily frame is affected by a severe form of rachitis. But in the cretin, dulness of the senses and an obtuseness of intellect, are the almost constant effects of the alterations of organization. Again, in a scrofulous constitution, the age of puberty is frequently accompanied by a favourable termination of the disorder; the system becoming fortified, is enabled to shake off the strumous habit. But no such happy period is in prospect for the youthful cretin; his disease becomes more inveterate as his years increase, and his mental imbecility

“Grows with his growth, and strengthens with his strength.”

Although cretinism and scrofula are said by Foderé to be equally endemic, the latter can hardly lay claim to this character, which is a distinguishing mark of the former.

Such, then, are the differences existing between these two disorders, which compel us to regard their nature and origin as quite distinct, though we recognise the resemblance of the structural changes, which each operates in the organization.

⁵ “Er könnte vielleicht die vollendetste, oder wenn man sich so ausdrücken dürfte, allgemeine Scrofelsucht genannt werden.” Vid. opus citatum, p. 191.

3. *Affections of the senses.* These must not be confounded with weakness of intellect. In many instances they exist together, as in the case of complete cretinism. But, on the other hand, one or the other may be found quite alone, and on this account they deserve to be considered as separate affections. For instance, the imperfection of one single sense, while the intelligence remains perfect, may be the sole phenomenon which bears witness to the presence of the disorder; or all the senses may remain intact, and yet the intellect be unable to profit by their operations. In this place I shall therefore consider successively the various defects to which the functions of the different senses are liable, not only in those who are free from intellectual disorder, but in those also with whom that calamity is superadded to the sensual derangement.

It may be laid down as a general rule, that the senses of a cretin are unusually obtuse and torpid. In some instances they appear never to have been developed. But it is more usual for them to become affected subsequently to the structural alterations that have been described as the precursors of cretinism. Deaf-and-dumbness is one of the most distinguishing features of this disorder, some degree of imperfection in the organs of speech being almost universally present in those who are its unhappy victims. Some are entirely dumb, while others can only give utterance to brutish growls, which appear dictated neither by thought or understanding. Others, not so far debased, are able by stuttering and stammering to express a few incoherent ideas. It has been asserted by Otto Thieme, that the *fræna linguæ* have in many cases been found wanting. If this be true, it may account in those particular instances for the difficulty of utterance. But there can be little doubt, that most generally the organ of hearing is primarily affected, and that in this, as in other cases of dumbness, the loss of speech is

dependent upon the incapability of receiving the impressions of sound. Dr. Rösch mentions the following curious circumstance, which he has observed to be connected with this difficulty of utterance. He says it is worthy of remark, that as a general rule, those individuals who merely hear badly or stutter, are almost always stupid and imbecile, and not only is acuteness of the sense, but also capability of the brain, deficient; while in those who are completely deaf, and par consequent completely dumb, the loss of the sense does not depend upon the brain and the capacity, but simply upon the affection of the organ of hearing itself.⁶

This affection may certainly exist, as I have myself witnessed, in districts where cretinism is endemic, without being implicated with any other symptoms of that disorder. But it is generally accompanied by that peculiar caste of features which so frequently prevails among the inhabitants of an infected district, characterising even the most powerful and healthy.

The sense of touch is in most cretins very obscurely developed, being generally more obtuse, the more advanced the individual is in the degrees of cretinism. I have already remarked that in cretins the skin is clammy and the extremities cold. Although they never complain of suffering from this half frozen state, yet they will be observed, as it were instinctively, to seek the sun and bask in his rays. This torpid condition of the circulation produces, as might have been expected, a great insensibility to external impression. Of slight injuries of the skin they appear to take no

⁶ “ Diejenigen Individuen, welche bloss übel hören und lallen, sind fast immer stumpf-foder-blödsinnig, und es fehlt nicht allein an der Schärfe des Sinnes, sondern an der Fähigkeit des Gehirns, während es bei den vollkommen tauben und in Folge der Taubheit sprachlosen Individuen nicht an dem Gehirne und an der Fähigkeit, das, was mit den Sinnen erfasst wird, zu begreifen, sondern allein an dem Gehörorgane fehlt.” Vid. opus citatum, p. 141.

notice, and such as are more severe give them but little pain. Although they instinctively place themselves in the sun, yet cold directly applied to the body does not annoy them any more than heat or wet. Even vermin, which would be intolerable to another individual, may batten upon them, and not provoke an effort for their dislodgment. The sense of touch (properly so called) is equally dull with that of feeling. The imperfect development of this sense appears to be in proportion to the abnormal form of the hand, and the condition of the skin which covers it. Those who are afflicted by the worst forms of cretinism, are rendered incapable by this imperfection, as well as by many others, of taking any part in the daily vocations of even their simple life. But to the generality this sense is so far serviceable, as to enable them to perform the coarser mechanical operations, and to work in the fields. Yet by them every thing is done slowly, imperfectly, and always in the same manner. The sense of smell is altogether absent in many cretins, and that of taste is very deficient.

The sense of sight alone maintains its functions for the most part unimpaired in the generality of cretins. There is indeed in several cases a morbid sensibility of the organs of vision, which is quite opposed to that lethargic heaviness which seems to weigh down the other senses. Yet many authors have considered this affection of the sight to be similar in its nature to those affections which oppress the other senses, which they classify universally by the term "*dulness*." It is quite true, as they assert, that there are many cretins who have more or less intolerance of light, which obliges them to close their eyes when basking in the sunshine. But does not this very fact prove, that so far from there being a dulness, there is rather an over-excitability of the organs by which the impressions of light are received? Certainly those cretins whom I have had opportunities of seeing, have appeared almost entirely to regulate their

actions by the guidance of this sense alone. There are no doubt some, in whom the alterations of the bodily structure have proceeded so far as to involve some part of the apparatus of vision. But these are exceptions, and I would only refer to those who have travelled in cretinish districts, whether the majority of wretched beings whom they have there witnessed, have not proved sufficiently sharp-sighted when alms were extended to them. Foderé made the same observation; in his description of a cretin he says, "La seule sens de la vue parait intact; mais qu'importe, s'ils voient, ils n'aperçoivent pas, ils ne sont pas sensible à l'aspect de la nature, ils ne distinguent ni les couleurs, ni les distances." When I discuss the moral education which the young cretin is capable of receiving, the preservation of this sense will be seen to afford the readiest means of rescuing him from that state of ignorance, to which the dulness of the other senses has consigned him.

4. *Affections of the mind* constitute another and more deplorable modification of cretinism. Under this form of the complaint are comprised, not merely the different degrees of intellectual weakness, but also a general or partial debasement of the moral feelings. As such a condition belongs more especially to advanced grades of cretinism, it is seldom that the individual in whom it occurs, is free from all of the sensual affections which have been described above. Still, as Dr. Rösch has remarked, there is a class of cretins in whom the prevailing character is a deficiency of the intellect. In such beings the senses are sufficiently acute; they see and hear, &c. as well as others, but there is a fault at the centre of the nervous influence, for they do not rightly comprehend what they see, hear, &c.⁷

⁷ "Während es den Stumpfsinnigen oft an der gehörigen Ausbildung der Sinnerven und Sinnesorgane fehlt, sind die Sinne der Blödsinnigen in der Regel scharf genug, sie sehen und hören gut, u. s. w.: es fehlt ihnen

The range of mental degradation, whether existing by itself, or in combination with other forms of cretinism, is very extensive. When carried to the highest degree, as in the complete cretin, it debases man below the level of the brute. Having neither the light of reason nor the guidance of instinct, he is unable to provide for his bodily wants, and would infallibly perish were it not for the aid of others. His moral feelings are equally depraved with his intellectual powers. Love, affection, and gratitude, are to him unknown sentiments.

It is, however, only in the complete cretin that the mind sinks into such an abyss of intellectual and moral debasement. In by far the most numerous class of cretins, such, for instance, as attract the notice of the tourist in the Alpine vallies and importune his charity, there are still some glimmerings of reason. Such individuals when kindly treated, are able to render some assistance to their families, in earning their own livelihood. They are generally employed in the fields in works which require little address, and still less reason. In this class deaf-and-dumbness is almost invariably a concomitant of the mental imbecility. Or, if there be not entire loss of speech, only inarticulate sounds are uttered.

Still it is very interesting to observe lingering in the clouded minds of these unhappy beings some faint spark of religion's sacred fire, some intuition of the soul's immortality. In illustration of this I will quote from the simple narrative of Dr. Guggenbuhl, his account of a circumstance, in which originated the idea of founding the establishment on the Abendberg. "Appelé," he says, "un jour à examiner une maladie maligne, qui depuis des siècles, ravageait de temps en temps les belles vallées des Alpes supérieures, j'eus l'occasion de voir un vieux crétin qui begayait une

aber am Central-organe der Nerven, am Gehirn, sie verstehen nicht was sie sehen hören u. s. w. Vid. opus citatum, p. 146.

prière à moitié oubliée devant une image de la vierge, à Seedorf, canton Uri. Cet aspect émut ma sensibilité en faveur de ces malheureux, et fixa ma vocation. Un être susceptible de concevoir encore la pensée de Dieu est digne de tout soin et de tout sacrifice.”⁸

In addition to these well-marked cases, in a country where cretinism is endemic, many individuals may be met with who, under the influence of this disease, display in a less degree an imperfect development of moral sense and understanding. Such persons are not deaf and dumb, nor are their other senses dull, and a casual observer might pass them by without remarking their deficiency. They may be taught many manual operations and domestic works, but they appear to do everything by the faculty of imitation, and without calling in the aid of comprehension. Others, again, more gifted than these last, are yet unable to learn to read; while others, though capable of learning to read, are never able to understand arithmetic. The moral attainments of such incomplete cretins are generally of a low standard; they are cheating, cowardly, deceitful, and ready to commit petty and secret offences. At the same time, their laziness induces them to prefer the want of the necessities of life to the labour required for their acquisition.

It may perhaps be objected that all which has been said with regard to the intellectual and moral degradation of cretins, would apply with equal force to the case of idiots; consequently, that we are not justified in separating the affections under which they suffer. In fact, M. Esquirol has said, that “le cretinisme est une variété remarquable de l'idiotie,” and has endeavoured to prove that it is merely a mental malady. But this opinion must be founded upon a very limited observation of the various forms under which cretinism shows itself. As I have already said, mental affec-

⁸ 1^{er} Rapport sur l'Abendberg. 1844. Fribourg.

tions constitute only one of these forms, at least if it be allowed, as has been argued above, that goitre, structural alterations, and dulness of the senses, (when existing independently of mental complications,) are the results of cretinism. Whereas, according to the definition of M. Esquirol, imbecility must attend all cases of cretinism, which I do not believe to be the case.

A difference between these two disorders may be proved from the fact, that cretinism is endemic, whereas idiocy only exists sporadically. The latter also differs from cretinism in being for the most part a congenital disease of the mind, to which the imperfections of the senses and the bodily deformities are merely accessory contingencies. In cretinism, on the contrary, the original disorder consists of the imperfection of the physical development, to which the intellectual and moral derangement is secondary. Neither is it, like idiocy, for the most part congenital, but commences frequently after the child has caused anticipations of a better destiny.

Still I admit that there is so much resemblance between individual cases, that without being acquainted with their history, it would be impossible to decide to which of these two disorders they belong.

CHAPTER VII.

DISEASES TO WHICH CRETINS ARE PECULIARLY LIABLE; THE ORDINARY DURATION OF THEIR LIFE; AND THE MANNER OF THEIR DEATH.

IN enumerating the diseases to which cretins are peculiarly liable, I purposely abstain from mentioning scrofula and idiotcy. I have already stated the great resemblance which exists between rachitis and the affections of the bodily organization in the infant cretin; and I have also referred to the similarity of idiotcy with those severer forms of cretinism in which the intellect is largely implicated.

As has been remarked by Dr. Rösch, the cretin has more to fear from chronic than from acute diseases, as well in regard to the functions of animal and vegetative life, as to the organs of circulation and of nervous influence. The more torpid and the more insensible to external impressions a cretin may be, the more will he be secure from attacks of fever. When typhus rages epidemically in a cretinish district, it commonly spares those who bear the stamp of cretinism.

Infant cretins do not escape the usual complaints of childhood. When attacked with measles, whooping-cough, or scarlet fever, they frequently sink under the disease. Or, if life be preserved, it is by so great a struggle, that the constitution never recovers from the mischief produced by the disorder. In some instances the first symptoms of cretinism

are developed by a prolonged and severe attack of some one of these infantile diseases.

It is most probable that the complaints from which cretins suffer in addition to their intrinsic disorder, vary according to the locality of the district in which they live. Thus the cretins of Suedorf, in the canton Uri, where the ground is very boggy, are almost all affected with scorbutus, evinced by their swollen and easily bleeding gums.

The forms of disease to which cretins may be said to be particularly subject, are glandular swellings, scrofulous ophthalmia, hernia, epilepsy, diarrhœa, asthma, marasmus, and apoplexy. Epileptic convulsions frequently supervene during the teething of the infant cretin; but they do not disappear, as in other children, when the cause that called them into action has ceased to irritate the system. By their persistence they combine with other symptoms to foretell the impending degeneration both of mind and body. The diarrhœa, to which a cretin is particularly liable, is consequent upon his great voracity, his appetite being always out of proportion to the wants of his system. The stomach is frequently loaded with the most unwholesome food, for the sense of taste is too deficient to preside over the choice of aliment. Indigestion is the necessary consequence; and this produces a constant irritation of the alimentary canal. Among cretins of the higher degree, more especially when neglected or ill-treated, attacks of mania are by no means uncommon. Under its impulse, as has been related by Wenzel, murder has actually been committed. Other authors have mentioned a peculiar suicidal form of this affection, which prompts the wretched maniac to attempt self-destruction by throwing himself into the fire.

The ordinary duration of the cretin's life has been differently stated by different authors. On this subject Foderé remarks, "*Telle est la vie physique et morale de ces indi-*

vidus pendant une très longue carrière ; car la plupart meurent de vieillesse, étant peu sujets aux maladies, et menant de nécessité une vie très sobre à l'abri du tumulte des passions, des tourmens de l'ennui, et de tout ce qui raccourcit les jours de l'homme, jouissant de toutes ses facultés."

Dr. Otto Thieme, on the contrary, states that the ordinary duration of life among this miserable class of beings is in proportion to the degree of cretinism to which each belongs ; so that cretins of the highest degree generally die very early, and few complete cretins attain an age of twenty or thirty years. At the same time he admits that instances have occurred of cretins of the most complete degree living for seventy-three and seventy-seven years.

From inquiries which I have made on this subject, I have been informed, that there is, in fact, as asserted by Dr. Thieme, a great difference in the age attained by cretins, according to the severity of the affection under which they labour. Although the cretin, who is not even capable of locomotion, never reaches the age of thirty, the more common forms of this disorder do not appear greatly to shorten life.

The immediate cause of death varies also according to the degree of cretinism. Those whom the severity of the disorder does not permit to outlive the limited duration of thirty years, most commonly sink into a state of atrophy. Debility and wasting set in with puberty, and all the symptoms of *marasmus senilis* afterwards supervene. These are accompanied by a severe form of asthma, and at the close of this short career, tubercles in the lungs and water on the chest make their appearance.

When life lasts for a period of seventy years, as it may do in the incomplete cretin, it is evident that he must be exposed to many causes of death. Yet in his case also life

frequently appears to be extinguished by a general atrophy. Seldom is it cut short by an inflammatory form of disease. In several instances, apoplexy, either due to the intercepted return of the blood from the head, by the pressure of the goitre on the blood-vessels, or by assuming that peculiar form, which has been characterised as apoplexia nervosa, closes the last scene of his unhappy existence.

CHAPTER VIII.

ON THE PHYSICAL AND MORAL EDUCATION OF THE INFANT
CRETIN.

THE questions which have been discussed in the foregoing chapters, may be interesting as matters of mere speculation to the physician and philosopher. To the philanthropist, however, their whole interest will be in proportion to the means which their solution may suggest for ameliorating the condition of those unfortunate beings who have been the subject of discussion. To such an one the investigation into the causes of cretinism, either predisposing or proximate, will be only preparatory to an inquiry into the remedies which a knowledge of them may be likely to impart.

It is gratifying to observe, that amid all the conflicting opinions as to the cause and nature of cretinism, only one sentiment obtains as to the proper method of combating the affection. It will be the object of this chapter to state the principal features of a system of education, moral as well as physical, to which the voice of reason has at the present day obtained such universal consent.

Much as the adult cretin may excite our compassion, all our endeavours will be of no avail to awaken the dormant energies of his intellect. When the bodily and mental degeneration has once assumed that fixed character, which is so evident in the crowds of imbecile beings who beset our paths in some of the Alpine vallies of Switzerland, it will

yield to no treatment. The very channels of instruction are closed, and the fountain of intelligence is dried up at its source. It is, no doubt, the sacred duty of those to whom they are entrusted, to palliate as much as possible the miseries of their condition. Kindness will do much towards rendering them harmless and tractable, whereas under ill-treatment they invariably become morose, obstinate, and even mischievous. By the power of imitation, which faculty in common with many animals they possess in a considerable degree, they may be made useful in the simplest occupations. But this is the utmost that can be expected of them.

If, however, the condition of the adult cretin be thus hopeless, the infant cretin, on the contrary, is in a position which holds out the brightest prospect of success to a judicious course of treatment. It is during the tender years of childhood that every effort should be made to prevent the development of an evil, which having once taken deep root can be no more eradicated. If this be done with perseverance and energy, incalculable are the benefits, which experience has proved to result; bodily and mental vigour in the place of disease and imbecility, a happy and useful citizen instead of a miserable and idiotic mendicant,—such are the bright changes in store for them, towards whom a proper system of education has been adopted.

It has been stated, firstly, that the predisposing causes of cretinism are generally allowed to be local, however much their intrinsic nature may be questioned; secondly, that cretinism is not a congenital disease, but shows its first symptoms at some period between the ages of six months and two years. A consideration of these two important facts would suggest a reasonable hope that if an infant whose delicacy of frame augured little power of combating the local malady, were removed from the sphere of its operations during the early months of life, he would escape its deleterious influence.

What reason would have dictated, experience has confirmed. The inhabitants of the cretinish districts in the canton Valais, at least such as could afford it, have been long accustomed to send their infants during the summer to be nursed on the mountains. A development of bodily vigour, and an expansion of the dawning intellect, were always found to be the result of this salutary measure. But at the approach of winter, the want of accommodation on the mountains obliged the children to return to their native vallies, where, exposed afresh to the local causes of cretinism before the constitution was sufficiently strengthened by mountain air to resist their influence, they too frequently became its victims.

It is not necessary then to wander far in search of a climate where the infant of the valley shall be no longer liable to the attacks of this insidious foe, whose weapons are so subtle that it is impossible to decide of what they consist. The same Providence which has hollowed out the deep valley where cretinism exists, has raised around it lofty mountains, the chosen seat of health and vigour. Such mountains are the natural lungs of the Alpine vallies. Here, as was proved by Saussure, at an elevation of three thousand feet, the causes of cretinism are no longer in operation. To these heights, therefore, the delicate infant should be transferred as soon as possible after its birth, or at least directly the first symptoms of cretinism are observed. Foderé has the merit of having first insisted upon this beneficial measure. In his essay, so often quoted, he says, "Toute femme habitant la plaine des vallées goîtreuses, doit faire nourrir ses enfants en montagne. Elle leur rendra un plus grand service, que si elle les allaitait ellémeme Pour les fortifier d'avantage contre l'impression de leur pays natal, il convient de n'y ramener, autant que faire se peut, les enfans, qu'à l'âge de sept à huit ans——"

But, as I have before stated, sufficient accommodation does not exist on the mountains to enable children to remain there during the winter months; and if such existed, the poorer inhabitants, in whose families cretinism is more frequently an heir-loom, could not afford to take advantage of them. The necessity, therefore, for the creation of establishments, where the children of the poor shall be enabled permanently to enjoy the advantages of mountain air, becomes most evident, and it appears strange that nothing of the kind should have existed so late as the year 1840.

The character of the first symptoms of cretinism afford an indication of the medical treatment to be adopted on the appearance of the disease. Though far inferior in efficacy to a removal from the infected district, it may be used simultaneously with change of air, or in cases where this is impracticable. As a general state of atony characterises the invasion of this disorder, producing as its result a deficiency in the development of the body, everything which has a tendency to invigorate the constitution should be adopted. Good food, chiefly consisting of meat for such as are old enough to digest it, should replace the potatoes on which the children are usually compelled to fare. Warm woollen clothing is also essential. Cleanliness should be promoted by baths, warm or cold, according to the season and the age of the child. At the same time strengthening medicines, such as iodine, steel, &c., should be administered internally. But it is unnecessary to say anything further on a subject which will suggest itself naturally to every reasoning mind.

To Dr. Guggenbuhl belongs the merit, not only of having originated, but of having carried out, the idea of founding an asylum for the education and treatment of infant cretins. Situated in a spot where every natural circumstance combines to render the attempt successful, there is every reason to hope that it will be as fortunate as it is meritorious.

Placed at an elevation of above 3,000 feet, its altitude not only guarantees it from the action of such causes as engender cretinism, but also secures it that combination of physical agents, which has been found most favourable for eradicating the first seeds of the disorder. All that is required to render the asylum proportionable to the wants which it is intended to meet, are sufficient funds. When we consider how large is the number of those unfortunate infants, in whom the first symptoms of cretinism are constantly showing themselves, and at the same time learn that the only establishment for their reception will contain but fifty of them at the most, we cannot but feel that among all the philanthropic institutions of the present day, this unfortunate class of our fellow-creatures has been strangely neglected. Let not my countrymen excuse themselves from assisting in this charitable work, under the plea that they have no concern in the distresses of foreigners. Do they not rush in crowds to admire those magnificent scenes, whose greatest beauty is due to that peculiar conformation of the earth's surface, which gives rise to cretinism? Little do the majority of them think, that what is giving them health and relaxation after the confinement and tedium of business, is to so many others the cause of sickness and misery. Would they but testify their gratitude for the health of body and mind which these scenes renew, by contributing in some degree towards the welfare of their unfortunate inhabitants, their visit would be "twice blessed, blessing both him that gives, and him that takes."

To such as pass through Interlachen, I would earnestly recommend a walk to the Abendberg: the visitor would be enabled there to see the working of a system of education, suited generally to infants tainted with cretinism, and adapted to each particular case.

As cretinism is primarily a disease of the body, consisting pre-eminently of a want of force, the first measure indicated

is to fortify the system. The pure air which circulates freely round the heights of the Abendberg, has of itself a most invigorating influence on the frame of the young infant, who has been hitherto bathed in the stagnant atmosphere of the valley. Wholesome food and warm clothing are also of great importance, both in enabling the child to develop his own organs, and to preserve his natural temperature. At the same time baths and frictions maintain a healthy action of the skin, and prevent the occurrence of internal congestions. In addition to these remedies, it is fair to mention the daily application of electrical currents to the enfeebled bodies of the little patients. What may be the value of the remediable influence exercised by this imponderable agent I am not prepared to say. By Dr. Guggenbuhl it is esteemed of great efficacy; and as some maintain that cretinism is owing to a deficiency of electricity in the atmosphere, it was fit it should be tried. Corroborant medicines are used in those cases which are considered to require them.¹ Such is the physical treatment adopted at the Abendberg.

When by such means the development of cretinism in the frame has been in some measure arrested, and the instruments by which the mind holds its communications with the external world have been strengthened, the moral education commences. This is peculiarly adapted to the blunted senses of the young cretin. It has been before remarked, that the sense of sight is the only one which remains to him unimpaired. The remark of Horace, therefore, applies with peculiar force to such a condition, when he says,—

“ Segnius irritant animos demissa per aures,
Quam quæ sunt oculis commissa fidelibus.”

This maxim has been very properly acted on in the school-

¹ Dr. Guggenbuhl considers that the use of cod's liver oil has been of great service.

room on the Abendberg. Instruction is instilled into the mind of the child rather by the eyes than by the ears. Even in teaching the use of speech, which is generally supposed to depend almost exclusively on the ear for the exercise of its powers, much advantage is derived from the sense of sight. It is by observing the inflexions of the lips of his instructor, that the cretin child succeeds in pronouncing the words, which are at the same time sounded in his ears through an ear-trumpet. Illustrated alphabets, arithmetical tables, and all the visible representatives of youthful instruction, are called into play in this difficult undertaking.

There are many children to whom it would be unfair in their present state to give the name of cretin, although by neglect they would probably merge into that state of degeneration. Some of these are distinguished by the gift of some particular talent, which being early called into action, and especially cultivated, may lead to excellence in that one accomplishment. Thus there are children who show a decided taste for music, although their minds are generally deficient in other points. The same has been observed with regard to drawing. This fact has been noticed by Foderé, who says, "*On remarque encore, que par une singularité aussi inexplicable, plusieurs de ces individus, doués d'une aussi faible intelligence, naissent avec un talent particulier pour copier du dessin, pour le rime, ou pour le musique.*"

With the design of evoking all such talents from the dormant mind, all proper instruction is resorted to at the Abendberg. Music in particular forms a part of the daily exercise, and I have heard some of the children sing hymns in perfect harmony to the notes of a violin. Such is the basis of the physical and moral education adopted on the Abendberg; to enter more minutely into its details would carry me beyond my proposed limits,¹

¹ For a more minute account of this establishment, the reader is referred to a pamphlet, entitled, "Some Account of Cretinism, and the

Brief as has been the existence of this institution, scanty as have been the means placed at its disposal, it has not left itself without a witness in the annals of humanity. Already the seed sown during the last four years on the Abendberg is bringing forth the noblest fruit. Hearts enlightened to feel, and lips instructed to express the lively sentiments of gratitude, are now offering up their testimony that this is no visionary scheme, no hallucination of an enthusiastic temperament, but the practical working of charity.

Even in 1842, Professor Demme bore witness to the improvement, both physical and moral, of the infants, whose progress he had watched during the preceding twelve months. At a meeting of the Société Suisse des Sciences Naturelles, he stated that "many infants, whom a year before he had seen in a deplorable state of cretinism, were completely transformed into human beings."³ From the first report, published in 1844, we learn, that of thirty infants treated on the Abendberg, six have been already restored to bodily health and mental vigour.⁴ This restoration, when once thoroughly effected, is permanent, -and guarantees the child against the subsequent influence of the predisposing causes of the disorder. In a letter which I

Institution for its cure on the Abendberg, near Interlachen, in Switzerland," by W. Twining, M.D. Parker, 1843.

³ Avis de la Société Suisse des Sciences Naturelles sur l'établissement pour la guérison du crétinisme sur l'Abendberg, en Suisse, émis dans sa réunion à Altdorf; au mois de Juillet, 1842.

⁴ Le nombre total des enfans est de 30; six ont été rendus au développement normal de l'enfance, seize sont encore en traitement, six plutôt idiots que crétins ont été licenciés avec amélioration physique, deux sont morts. J'ai constaté qu'il faut trois ou six ans pour guérir et développer un enfant crétin. Mais ce résultat s'obtient souvent au bout de 1 à 2 ans, quand on attaque le mal dès l'origine. On negligera sans doute moins cette précaution à l'avenir. Aucun de ces enfans n'a pu se passer de remèdes, vu la gravité du mal. Vid. 1^e Rapport sur l'Abendberg." Fribourg, 1844.

have received from Dr. Guggenbuhl, he quotes an instance of this gratifying circumstance:—"I returned only yesterday from a small tour which I have made to Sion, the capital of the Canton Valais. It was an inexpressible joy and gratification to me, to find some of my beloved pupils, who two years ago received the first impulse towards development upon the Abendberg, in a state of perfect health and actual progress—which proves that the bad climate of that district has had no influence upon them."⁵

I cannot take leave of this subject without bearing witness, from personal observation, during several visits to the Abendberg, to the unremitting zeal and kindness of Dr. Guggenbuhl towards his little flock. His self-devotion to the cause of humanity is beyond all praise, and must bring with it its own recompense. Retiring from the world at an early period of life, not for the idleness of the hermit's cell, but for the constant labour of a physician both of mind and body, he has chosen for himself a task in which he has a right to elaim the ready assistance of his fellow-men.

⁵ Extract from a letter written by Dr. Guggenbuhl, Dec. 1, 1844:—"Gestern bin ich von einem kleinen Ausfluge zurückgekehrt, den ich nach Sitten, der Hauptstadt des Kantons Wallis gemacht habe. Es war mir eine unausprechliche Freude und Erquickung, einige meiner geliebten Zöglinge, die schön vor Zwei Jahren den ersten Impuls zu ihrer Entwicklung auf dem Abendberg erhalten haben, ganz gesund und fort: geschritten wieder zu finden, so dass das schlechte Klima jenes Landes keinen Einfluss mehr auf sie gehabt hat."

LONDON :

PRINTED BY G. J. PALMER, SAVOY STREET, STRAND.

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